Financial development, financial inclusion and welfare dynamics in sub-Saharan Africa

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DECLARATION

By submitting this thesis electronically, I declare that the entirety of the work continued therein is my own, original work, that I am authorship (unless to the extent explicitly otherwise stated) and I have not previously in its entirety or in part submitted it for obtaining any qualification.

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ABSTRACT

Over two decades of post reforms, the financial system of many sub-Saharan African countries remained underdeveloped and highly exclusive with only 34% of adults 15 years and above having a basic bank account. Nevertheless, sub-Saharan Africa has experienced robust growth, on average 4.8% per annum over the past 15 years surprisingly with widening income inequality and sluggish decline in headcount poverty ratio. This unfolding evidence challenged conventional thinking about the role of finance on growth and welfare. However, there is a shortage of empirical evidence linking financial development and financial inclusion to welfare. Knowledge of this relationship is important to shape policy thinking on how financial reforms can help to redress poverty and income inequality in sub-Saharan Africa. The purpose of this study is to fill this knowledge gap by examining the relationship between financial development, financial inclusion and welfare dynamics in sub-Saharan Africa. The thesis is structured into four main chapters, a descriptive chapter and three empirical chapters.

The evidence from the descriptive analysis showed that financial inclusion, financial stability, financial integrity and consumer financial education are interrelated and under a suitable balance re-enforces each other. It also emerges that the level of financial intermediation in sub-Saharan Africa is low. As a result, huge unmet demands for credit and saving facilities exist across all regions. By regions, the rate of formal saving and borrowing in Southern, Eastern and West African countries is two times higher than the rate in French West and Central African countries. Overall, the level of financial inclusion in French West and Central Africa is the lowest in sub-Saharan Africa.

The results from Chapter 3 revealed that income inequality will increase at the early stages of financial development but the positive trend reverses to negative as the financial sector reaches a higher stage of development – *inverted u-shape*. Specifically, financial sector might lend more to the rich and well-connected elites at some levels of financial development especially when institutions are weak, but as the system develops, more people have access and resultant effects tickles down to the lower income earners, hence income inequality starts to reduce. Finally, income inequality has some links with GDP per capita – increases with lower GDP per capita and declines as GDP per capita grows, translating into an *inverted u-shape.*

Empirical evidence from Chapter 4 suggests that financial inclusion has both positive and negative relationships with welfare, depending on the aspect of financial inclusion and the indicator of welfare used. First, account ownership, formal loan and saving have a positive relationship with human development index but the relationship with electronic payment is mixed. Secondly, health insurance and loan to pay school fees reduces headcount poverty whiles, account ownership, formal

loan and health insurance reduces under-five mortality rate per 1000 live birth. Finally, formal account use for business purposes, electronic payment and formal loan increases income inequality at least in the short run. These results reflect the prevailing robust growth and rising levels income inequality in sub-Saharan Africa.

Finally, evidence from Chapter 5 revealed that financial inclusion has a positive relationship with assets ownership. The results suggests that a one-unit change in financial inclusion (credit, monthly saving and insurance) can increase assets ownership by 21% at the 10^{th} quantile of the conditional assets distribution for users of financial services compared to non-users holding other factors constant. For all the aspects of financial inclusion analysed, the magnitude of the response to a unit increase in financial inclusion at the 10^{th}, 20^{th} and 30^{th} quantiles is higher than the response at the median quantile. This suggests that financial inclusion and assets building programmes can have a substantial effect at the bottom of the assets distribution. Hence, this evidence provides a good case for a *progressive assets building social welfare* for the poor and low-income families in South Africa.

In summary, these results showed that French speaking west and Central African countries have lower levels of financial inclusion compared to other regions in sub-Saharan Africa. Furthermore, the emerging evidence suggest that financial development increases income inequality in the group of African countries studied and that low GDP per capita also increase income inequality. Finally, evidence also revealed that financial inclusion exerts some positive influence on welfare with exception of income inequality and that asset building social welfare programmes can be used to complement the income transfer approach to poverty reduction.

Key Words

Financial development, financial inclusion, welfare, augmented mean group and quantile regression.

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In memory of my late parents, Pa Tita Fonebeh and Mama Mispa Obangha and my elder brother Mr Ndagha Anthony who rest in the Lord's hand in July 2016. Though you are gone, you still lie fresh in my memory, may your souls rest in perfect Peace.

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LIST OF ACRONYMS AND ABBREVIATIONS

ADBI	Asian Development Bank Institute
ADF	Augmented Dickey Fuller
AfDB	Africa Development Bank
AFI	Alliance for Financial Inclusion
ANOVA	Analysis of variance
AMG	Augmented Mean Group
ARDL	Autoregressive Distributed Lag Models
ATM	Automated Teller Machines
CA	Central Africa
CADF	Cross-sectional Augmented Dickey Fuller
CCEMG	Common Correlated Effect Mean Group
CGAP	Consultative Group to Assist the Poor
CIA	Conditional independence Assumption
CIPS	Cross-sectional augmented
DRC	Democratic Republic of the Congo
EA	East Africa
ERSA	Economic Research Southern Africa
FATF	Financial Action Task Force
FE	Fixed Effect
FWA	French West Africa
G20	An international forum for the governments and central bank governors from 20 major economies
GDP	Gross Domestic Product
GDPPKG	Gross Domestic Product per Capita Annual Growth
GNI	Gross National Income
GMM	Generalised Method of Moment
GPFI	Global Partnership for Financial Inclusion
IAIS	International Association for Insurance Supervision
IDA	Individual Development Account
IMF	International Monetary Fund
IPS	Starting point of Im et al. (2003)
IV	Instrumental variable

LIS	Luxembourg Income Study
MENA	Middle East and North Africa
MCA	Multiple Correspondence Analysis
MG	Mean Group
NSFAS	National Student Financial Aid Scheme
OECD	Organisation for Economic Cooperation and Development
OLS	Ordinary Least Squares
PhD	Doctor of Philosophy
PPP	Purchasing Power Parity
QTEs	Quantile Treatment Effects
RCM	Random Coefficient Model
RCT	Randomised Control Trials
RE	Random Effects
RMSE	Root Mean Square Error
SMEs	Small and Middle Size Enterprises
SA	Southern Africa
SSA	Sub-Saharan Africa
SASSA	South Africa Social Security Agency
SWIID	Standardised World Income Inequality Database
UNDP	United Nation Development Programme
USB	University of Stellenbosch Business School
WA	West Africa
WDI	World Develolpment Indicators
WWW	World-Wide Web or Internet
WBGFD	World Bank Global Financial Development

CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

The role of the financial sector to intermediate between net savers and borrowers as well as to support economic activities is well documented in both the theoretical and empirical literature. Such evidence consistently shows that well-developed financial systems improve well-being (Beck et al., 2007a; Levine, 2005). However, after over two decades of post financial reforms[1], the financial sector of many sub-Saharan Africa (SSA) countries are yet to perform their intermediation role optimally. Private sector credit as a ratio to GDP in SSA trend below 25% since the 1990s and the number of adults 15 years and older with formal bank accounts including mobile money accounts increased by 10% to 34% in 2014 (Allen et al., 2014; Demirgüç-Kunt et al., 2014). Notwithstanding this low level of financial intermediation, SSA has experience robust growth on average 4.8% per annum for over one and half decades with rising levels of income inequality (AfDB, 2012). This runs contrary to the theoretical perspective that financial development will improve efficiency of capital allocation, which in turn will stimulate growth and relax credit constraints for the poor, thus reducing income inequality (Beck et al., 2007a). Consequently, the question remains as to whether financial development actually leads to a reduction in income inequality and enhanced welfare, particularly in SSA. Just like two sides of a coin, "head" and "tail", the financial system comprises financial development (depth dimension) and financial inclusion[2] (access dimension). Both constitute the broader financial system but are distinct because a developed financial system is not necessarily inclusive. This takes the study to the next issue related to the access dimension of the financial system.

Similarly, there is a growing consensus from the theoretical perspective, buttressed by emerging empirical evidence, that broader access to formal financial services enhances overall welfare and supports prosperity. That is, greater financial inclusion through rural bank branch expansion and extension of financial products lower poverty rate, increase saving and business growth (Aportela, 1999; Bruhn and Love, 2013; Burgess and Pande, 2005). A recent study by the International Monetary Fund (IMF) research team showed that income distribution matters for growth. Specifically, Dabla-Norris et al. (2015) found that if the income share of the top 20% richest

[1] Some of these reforms include interest rate liberalisation, removal of ceilings on deposits and lending rates, and restructuring and privatisation of state-owned banks and efforts to develop the financial sector (Senbet and Otchere, 2005).

[2] Financial inclusion is the provision of basic financial services such as bank accounts, savings, loans, micro insurance and other services to the poor and underserved.

increases by 1 percentage point, GDP growth will decline in the medium term. However, a similar increase in the income shares of the bottom 20% poor is associated with higher GDP growth. This suggests the need for greater inclusion to enhance share prosperity and improve the living standard of the poor.

For poor individuals with erratic and unpredictable income, financial inclusion ensures effective management of their resources by providing a convenient and safe means to save. Saving helps build transaction history and improve credit scores, thereby opening the doors for easy access to credit facilities. Financial inclusion also improves the balance sheet of households through access to savings and investment in productivity-enhancing economic activities that support economic growth and raise the standard of living of the poor. The access of the missing middle[3] such as SMEs to loans or lines of credit will enable them to invest in productive assets that in turn will increase job creation. Better wage offers because of business growth will lead to higher disposable income for employees, which can increase saving, thereby increasing deposit base of banks (see Khan, 2011 for details). Apart from the link with welfare, financial inclusion also relates to other aspects of the financial system such as financial stability, financial integrity and financial consumer protection (Cull et al., 2012; Mehrotra and Yetman, 2015; Han and Melecky, 2013).

Despite these emerging links between financial inclusion and welfare and other aspects of the financial system, SSA is host to about 350[4] million unbanked adults and this is likely the results of withdrawals of financial services amidst ongoing financial reforms (Culpeper, 2012: 3). If financial inclusion does improve well-being, then the need for inclusive financial sector development in SSA is critical, now more than ever given the high levels of poverty and income inequality. Based on this argument, the question that needs to be answered and which has not been given proper research attention in the literature is, if financial inclusion enhances welfare, which aspects of financial inclusion are instrumental in this regard?

The first two objectives examined how financial development and financial inclusion affect welfare at the aggregate level. The third objective builds on the second and extends the analysis at the individual level. This is motivated by growing evidence from the developed economies that financial inclusion can be used in combination with asset accumulation to achieve targeted intervention at the lower end of the income pyramid. This strategy started in the 1990s in the United States of America, Singapore and Canada, where financial inclusion and asset accumulation are

[3] The missing middle small and medium size enterprises that are too big to be financed by microfinance and too small and risky for conventional commercial banks as such are underserved (Culpeper, 2012).
[4] This is when mobile account holders are considered as financial inclusion which in fact may not be the case if these mobile accounts are not linked to a physical account at a formal financial institution to enable the holder to save and build assets. The population of SSA age 15 + is about 533.1 million (0.66*533.1 = 351.8 million unbanked adults).

used as a strategic intervention to develop the capacity of the poor whilst assisting them to smooth consumption through income transfer. Proponents of this "*asset building social welfare*" approach argued that a sustainable way for the poor out of poverty is to build some level of assets because these assets generate further income (Sherraden, 1991; Sherraden and Boshara, 2007).

The available evidence from this innovative approach to redress socio-economic challenges are promising although skewed in favour of developed countries because of the existence of an effective welfare system and developed financial sector. Recently, some footprints have started to emerge in Africa, in Uganda, Zimbabwe and Ghana (Sherraden and Boshara, 2007). Under the asset building social welfare programme, government provides incentives for the poor and low-income population to save for specific purposes such as post-secondary education, home purchase, and to start a small business with "match deposits". Early evidence from Africa shows that assets building programmes help to reduce vulnerability and sexual harassment for orphanage children and to change saving behaviours amongst youth (Ssewamala and Ismayiloya, 2009; Austrian and Muthengi, 2014; Lee et al., 2015; Crea et al., 2013).

Unfortunately, this issue cannot be investigated across countries due to data limitation on financial inclusion and asset accumulation. Consequently, this last objective focuses on South Africa to provide more insights into this relationship at the individual level. Several factors motivate the focus on South Africa. Firstly, the existence of an effective social welfare system with about 16.9 million poor people receiving income transfers (SASSA, 2016). Secondly, a well-developed financial system with about 75% of adults 15 years and older with access to a basic bank account (FinScope, 2014). Finally, the availability of a suitable financial inclusion dataset, FinScope, with sufficient indicators of individual assets ownership.

The above large number of grant recipients seems to suggest the South African government relies heavily on income transfer as its main intervention strategy to redress social vulnerability. With this rapid growth, one wonders about the sustainability of the fiscal budget and importantly the effect on inter-generational poverty transfer. However, if government considers capacity development whilst smoothing consumption for the poor, foster childcare and child grant caregivers can be incentivised through *match deposits* to save for post-secondary education for these children. Unfortunately, a complementary strategy to income transfer through assets building is yet to be tested in South Africa. Hence, the last empirical essay of this thesis will explore the relationship between financial inclusion and individual asset ownership in South Africa. This has implications for asset building social welfare programmes for the poor and low-income families.

Generally, the conventional belief is that financial reforms will stimulate financial development and streamline efficiency of allocating scarce resources, leading to economic growth and improvement

in overall well-being. However, SSA faces slow poverty reduction and widening income inequality in an era of robust economic growth post financial reforms. This challenges conventional convictions about the role of financial sector development on growth and welfare. Thus, the three areas highlighted relating to these challenges will form the basis of this thesis and each is dealt with as a stand-alone paper to fill the knowledge gap and contribute to the empirical literature.

1.2 OBJECTIVES OF THE THESIS

The main objective of this thesis is to examine the relationship between financial development, financial inclusion and welfare dynamics in SSA. The study achieves this by pursuing four specific objectives that are stand-alone papers. The first objective is divided into two sub-parts: part 1 explores the links between financial inclusion, financial stability, financial integrity and consumer financial protection and part 2 gives a descriptive analysis of the level of financial inclusion in SSA. The second objective re-visits the long-run relationship between financial development and income inequality in a balance panel of 15 selected African countries from 1985 to 2007. The third objective examines the relationship between financial inclusion and welfare in a cross-section of 37 sub-Saharan Africa countries. Finally, the fourth objective explores the relationship between financial inclusion and individual assets ownership in South Africa.

Objective 1:

The aim of the first objective, presented in Chapter 2, is twofold: part one explore the links between financial inclusion, financial stability, financial integrity and consumer financial protection. Part two provide a descriptive analysis of the level of financial inclusion across regions in SSA using the global financial inclusion (Global Findex) dataset for 2011 and 2014. The analysis focuses on three dimensions of financial inclusion: account ownership, credit and savings. This sets the basis for the empirical analysis and highlights regions and countries that are lagging behind in terms of financial outreach to the adult population.

Objective 2:

The second objective of this study, executed in Chapter 3, focuses on the long-run relationship between financial development and income inequality in a panel of 15 selected African countries from 1985 to 2007 using an augmented mean group (AMG) estimator. The objective of this chapter is to determine whether or not financial development has an effect on income inequality and whether the effect depends on the level of financial development or the level of economic development. This is achieved using the Standardised World Income Inequality Dataset (SWIID) created by Solt (2009). The countries covered are Botswana, Côte d'Ivoire, Egypt, Ethiopia, Ghana, Lesotho, Morocco, Nigeria, Malawi, Mauritania, Mauritius, Rwanda, South Africa, Tunisia and

Uganda. Due to data limitations in SSA, three Northern African countries are included to increase cross-sectional (N) and time (T) dimensions in order to permit a technique that will estimate the relationship per country. This allows the uncovering of the heterogeneous effect of financial development on income inequality thereby addressing the limitations of previous studies of pooling the data across countries and assuming a homogeneous effect.

Objective 3:

The third objective, which is the focus of Chapter 4, uses a cross-section regression to examine the relationship between different aspects of financial inclusion and welfare in a group of 37 SSA countries using the disaggregated Global Findex 2011 dataset. Seven aspects of financial inclusion are used: ownership of an account at a formal financial institution, formal account used for business purposes, electronic payments, formal loan, formal loan to pay school fees, formal saving and health insurance. These are disaggregated into male and female as well as regional (rural and urban). Welfare is proxied by four indicators: human development index (HDI), poverty headcount ratio (less than US$1.25 a day), under-five mortality rate per 1,000 live births and income inequality as measured by the Gini coefficient. The aim is to determine which of these aspects has the greatest potential to enhance welfare and which indicator(s) of welfare, if any, is affected the most by financial inclusion. This is essential to fill the gap in the empirical literature and to guide policy on which aspect of financial inclusion to encourage for more uptake and use.

Objective 4:

The final objective addressed in Chapter 5, uses quantile regressions to explore the relationship between financial inclusion and asset accumulation in South Africa using the FinScope 2014 consumer survey. The underlying objective is to access the feasibility of asset building social welfare programmes for the poor and low-income families in South Africa. The FinScope dataset has information on several indicators of individual asset ownership as well as access and use of financial services from the formal and informal financial sectors. Hence, a suitable dataset to explore a relationship that has implications for asset building social welfare programmes to assist the poor build assets and find a sustainable pathway out of poverty. Three aspects of financial inclusion are used (credit, monthly saving and insurance) and 22 different types of individual physical asset indicators to derive an asset index using multiple correspondence analyses (MCA). The results of this chapter address empirical shortages in the field of financial inclusion and asset ownership in South Africa and provide key insights for social policy in South Africa.

1.3 LAYOUT OF THE THESIS

The remainder of the thesis is organised as follows. Chapter 2 provides an understanding of the links between financial inclusion and the other core aspects of the financial system. It also provides a comparative descriptive analysis of the level of financial inclusion in sub-Saharan Africa between 2011 and 2014. The analysis focuses on three dimensions of financial inclusion: account ownership, credit and savings, and includes only countries that participated in the two Global Findex surveys.

Chapter 3 presents the first empirical paper of the study on the relationship between financial development and income inequality in a balanced panel of 15 African countries from 1985 to 2007 using an augmented mean group estimator.

Chapter 4 examines the relationship between financial inclusion and welfare in 37 Sub-Saharan African countries using the Global Findex 2011 dataset.

Chapter 5 investigates the relationship between financial inclusion and assets ownership at the individual level using the FinScope 2014 consumer survey for South Africa.

Finally, Chapter 6 draws conclusions from the main findings, discusses policy implications and suggests potential areas for further research.

CHAPTER 2
CONTEXTUAL BACKGROUND OF FINANCIAL INCLUSION IN SUB-SAHARAN AFRICA

2.1 INTRODUCTION

Financial inclusion has recently gained national and international recognition among policy makers and in the development arena as a major driver for inclusive economic growth. As such, the G20 leaders endorsed inclusion as one of the pillars for the global development agenda (GPFI, 2012b: 1). Foundations such as the Bill and Melinda Gates Foundation have supported initiatives to extend financial access to the underprivileged and have sponsored the Global Financial Inclusion (Global Findex) database at the World Bank (Demirgüç-Kunt and Klapper, 2012a).

Evidence from the Global Findex showed that account ownership worldwide has improved by 11%, from 51% in 2011 to 62% in 2014, but account penetration is skewed to the developed world. Account ownership in high-income OECD countries is above 90% while developing and Africa countries host the bulk of unbanked adults. SSA host the second largest unbanked after MENA with only 34% of adults with accounts (including mobile money accounts) by 2014. This represents a 10% increase from 24% in 2011 but still leaves about 350 million adults without a basic bank account (Demirgüç-Kunt and Klapper, 2012a; Demirgüç-Kunt et al., 2014).

Despite this low level of financial inclusion, detailed analysis of various aspects of financial inclusion across regions in SSA is lacking. Such an analysis is essential to provide insights for policy intervention. Furthermore, given the "vision 2020" of the World Bank to provide access to everyone and the increasing adoption of financial inclusion at national level (Cull et al., 2014), the potential linkages between financial inclusion and the other core aspects of the financial system need to be well understood.

The main objective of this chapter is first to explore the potential linkages between financial inclusion and the other core aspects of the financial system: financial stability, financial integrity and consumer financial protection. Secondly, to use the Global Findex 2011 and 2014 for SSA countries that participated in both surveys to give a detailed comparable descriptive analysis across four[5] main regions: Central, West, East and Southern Africa. West Africa is divided into French-

[5] Central Africa (Cameroon -CMR, Chad -TCD, Congo -COG, Equatorial Guinea -EGA, Democratic Republic of Congo -ZAR, Gabon -GAB and Central African Republic -CAR); West Africa (Benin -BEN, Burkina Faso -BFA, Côte d'Ivoire -CIE, Ghana -GHA, Guinea -GIN, Liberia -LBA, Mali -MLI, Mauritania -MRT, Niger -NER, Nigeria -NGA, Senegal -SEN, Sierra Leone -SLE, Togo -TGO); Southern Africa (Angola -AGO, Botswana -BWA, Lesotho -LSO, Madagascar -MDG, Malawi -MWL, Mauritius -MUS, Namibia -NBA, South Africa -ZAF, Swaziland -SWA, Zambia -

speaking West African (FWA) countries (Benin, Burkina Faso, Guinea, Mali, Niger, Senegal and Togo) and non-French-speaking countries (Nigeria, Ghana, Mauritania and Sierra Leone). The analysis focuses on three indicators of financial inclusion: account penetration, credit and savings. This grouping is mainly for analytical purposes and has nothing to do with countries and regional demarcations.

The rest of this chapter is organised as follows: Section 2.2 discusses the linkages between financial inclusion and the other three core aspects of the financial system. Sections 2.3, 2.4 and 2.5 analyse access to and use of financial services across countries, population segments and across regions. Finally, Section 2.6 draws conclusions to the chapter.

2.2 FINANCIAL INCLUSION, FINANCIAL STABILITY, FINANCIAL CONSUMER PROTECTION AND FINANCIAL INTEGRITY: THEORETICAL LINKAGES

Since the empirical evidence of Burgess and Pande (2005) linking financial inclusion with poverty, financial inclusion has been widely adopted and prioritised on the policy agenda for many developed and developing countries (Cull et al., 2014). Whilst financial inclusion is essential to foster inclusive growth, there are some potential challenges involved. First, the inclusion of the poor and underserved into the formal financial system introduces new challenges to regulators, particularly in Africa, with limited resources and human capital. Second, there is a need to establish the potential link between financial inclusion and financial stability as countries pursue the ultimate objective of universal financial inclusion. However, this potential link is complicated and complex because of the inter-link of financial inclusion with other core aspects of the financial system, namely financial stability, financial integrity and financial consumer protection. The lack of data to measure financial inclusion over time as well as the objective of financial stability, financial integrity and consumer protection aggravates these challenges, making it difficult to draw strong conclusions (Cull et al., 2012). As such, Cull et al. (2012: 1) argue that these four factors are inter-related and under the right conditions will be positively related. Consequently, failures in one dimension are likely to lead to problems in the others. Therefore, there are good reasons to believe that the outcome level of financial inclusion, financial stability, financial integrity and financial consumer protection objective may be mutually re-enforcing each other and inter-dependent. According to the International Association for Insurance Supervision IAIS (2012: 7), financial inclusion contributes to financial stability and is an important element in the delivery of fair, safe and stable financial markets in any jurisdiction. Other studies such as Khan (2011), Han and

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ZAM, Zimbabwe -ZIM,), East Africa (Burundi -BDI, Comoros -COM, Ethiopia -ETA, Kenya -KEN, Rwanda -RWD, Somalia -SMA, Sudan -SDN, Tanzania -TZA, Uganda -UGA).

Melecky (2013) and Morgan and Pontines (2014) supported the existence of these linkages. According to the Consultative Group to Assist the Poor (CGAP, 2012: 11), the following hypothesised linkages exist at the outcome level:

First: From financial stability to financial inclusion

I. Financial stability builds consumer trust in the financial sector as a whole, making it more likely that individuals will want to be included.
II. Financial stability can affect key factors such as interest rates and inflation that can reduce key prices and make financial services more affordable to the poor.

Second: A reverse link from financial inclusion to financial stability

- On the other hand, financial inclusion brings more people into the formal financial sector and engenders greater participation by different segments of the economy. This is likely to increase aggregate savings, ensure a more diversified, and stable deposit base of banks, thereby increasing systemic stability (Khan, 2011: 4; Mehrotra and Yetman, 2015: 51). Furthermore, diversifying the loan portfolio of lenders away from large borrowers reduces the chances of systemic risk.
- A financial sector that is inclusive is more likely to have greater political legitimacy by enhancing social cohesion and this reduces the chances of political instability, which triggers financial instability.
- Greater financial inclusion enables households to smooth consumption by adjusting their savings and borrowings in response to changes in interest rates and other unexpected economic development. Hence, a large informal sector hinders the interest rates channel of monetary policy because the financial decisions of financially excluded individuals and firms are independent and unaffected by the monetary policy action of the central bank. Consequently, as access to the formal financial sector increases through financial inclusion, it makes the interest rates channel of monetary policy more effective. This facilitates the task of the central bank to safeguard financial stability (Khan, 2011: 4; Mehrotra and Yetman, 2015: 88).

Third: financial inclusion, financial integrity and consumer protection

According to Chiwira et al. (2013: 147) financial integrity refers to the reputation of financial institutions. A financial system characterised by bank failures, fraud, money laundering and insider trading reduces the integrity of the financial system. A similar pair-wise linkage between financial inclusion, integrity and consumer protection can be hypothesised as follows.

- Financial integrity is likely to engender more trust in financial institutions and the financial system as a whole, thus encouraging uptake and use of financial services.
- Financial inclusion moves people from transacting in cash only to bank accounts that can be monitored. This helps in the implementation of Anti-Money Laundering and Combating the Financing of Terrorism guidelines and makes it possible to track and report suspicious transactions for proper investigation (Khan, 2011: 4).
- Financial inclusion increases the ability to apply and enforce consumer protection norms, thereby increasing the integrity of the financial sector.

While empirical evidence to substantiate these hypothesised theoretical linkages is still at infancy, there are ultimately good reasons for countries to align the objectives of financial inclusion, financial stability, financial integrity and consumer protection in the long run. This is because financial inclusion brings new consumers into the mainstream financial sector, some of whom are first time users with no credit record or identification documents.

This increases risk on the part of the financial services providers and may compromise on compliance with the standard setting bodies' requirements such as the "*know your customer*" requirement of the Financial Action Task Force (FATF). There is therefore the potential of conflict between greater financial inclusion and the other core objectives of the financial system, and striking a balance between these objectives is a challenging task. However, the Global Partnership for Financial Inclusion (GPFI, 2012a) recommended the adoption of a proportionate approach to regulation and supervision. That is, regulators and supervisors need to develop a framework that balances the risks and benefits against the costs of financial inclusion. The ideal option will be to conduct a due diligence assessment of the benefits of bringing the financially excluded individuals and firms into the formal financial system and develop proportionate approaches that will enhance inclusion. Sometimes this can occur on a "*test and learn*" basis where new ideas are tested on a small number of customers to predict impact. Appropriate implementation, and tiering of regulatory and supervisory requirements depending on the nature of risk, scales and complexity of the financial product can be enforced once the trial yields favourable outcomes (GPFI, 2012a: 3).

Nonetheless, there is also the possibility that financial inclusion can lead to financial instability with a devastating effect on welfare and the economy at large. This can occur when financial inclusion is driven by reckless credit extension and/or by rapid growth of unregulated parts of the financial sector. Consequently, when banks extend credit to the previously excluded and the poor without due consideration of their ability to pay, financial risk can result in crisis (Mehrotra and Yetman, 2015: 91). Available evidence also tells us that before the global financial crisis of 2007/2008, about 150 million new customers were added to the formal financial sector every year (Hannig and Jansen,

2010; World Bank, 2012). It is obvious that a significant number of these new customers lack basic understanding of the sophistication of formal financial services to make informed decisions and efficient use of the available services. As such, the inclusion of these new customers can be associated with the risk of financial instability if appropriate financial consumer protection is not in place to empower consumers.

Consequently, financial consumer protection should form an integral part of financial inclusion to ensure that providers of financial services do not use their informational advantage to increase profits and lure vulnerable customers into over-indebtedness. A well-designed regulatory framework and institutional structure is a prerequisite to ensure timely discourse of financial information during and after the customer has acquired the product (Hannig and Jansen, 2010). Therefore, active policies are required to support this broad-based financial inclusion agenda (see World Bank, 2014a for detailed review). Table 2.1 presents a list of African countries that have some consumer financial education strategy in place following the World Bank 2013 survey.

Table 2.1: Consumer financial education and banking crises

Countries	Agency has the responsibility to implement and/or oversee any aspect of financial education/literacy	Agency conducts a survey of financial capability/literacy and publishes regular reports	Agency develops and monitors implementation of a strategy	Agency provides training on financial literacy topics	Agency issues guidelines to the providers of financial services on financial education/literacy	Agency develops training materials on financial topics	Banking crises in in sub-Saharan Africa 1970-2007
Benin*	No	No	No	No	No	No	1988
Botswana	Yes	No	No	No	Yes	Yes	None
Burkina Faso*	No	No	No	No	No	No	1990
Burundi*	No	No	No	No	No	No	1994
Cape Verde	Yes	No	Yes	No	No	Yes	1993
Congo, Dem. Rep.*	Yes	No	Yes	Yes	No	Yes	1983,1991,1994
Côte d'Ivoire *	No	No	No	No	No	No	1988
Guinea-Bissau*	No	No	No	No	No	No	1995
Kenya	No	Yes	No	Yes	Yes	No	1985,1992
Madagascar*	No	No	No	No	No	No	1988
Malawi	Yes	Yes	Yes	Yes	Yes	Yes	None
Mali*	No	No	No	No	No	No	1984
Mauritius*	Yes	No	No	Yes	No	No	None
Namibia	No	No	No	No	No	No	None
Niger*	No	No	No	No	No	No	1983
Nigeria	Yes	Yes	Yes	No	Yes	Yes	1991, 2009
Senegal*	No	No	No	No	No	No	1988
South Africa	Yes	Yes	Yes	Yes	Yes	Yes	None
Sudan	No	No	No	No	No	No	None
Swaziland	Yes	No	No	Yes	Yes	No	1995
Tanzania	Yes	No	No	No	No	No	1987
Togo*	No	No	No	No	No	No	1993
Uganda	Yes	No	Yes	Yes	Yes	Yes	1994
Zambia	Yes	No	Yes	Yes	No	Yes	1995

Source: World Bank 2013 Financial Literacy Survey and Laeven and Valencia (2013)

* Indicates French-speaking countries

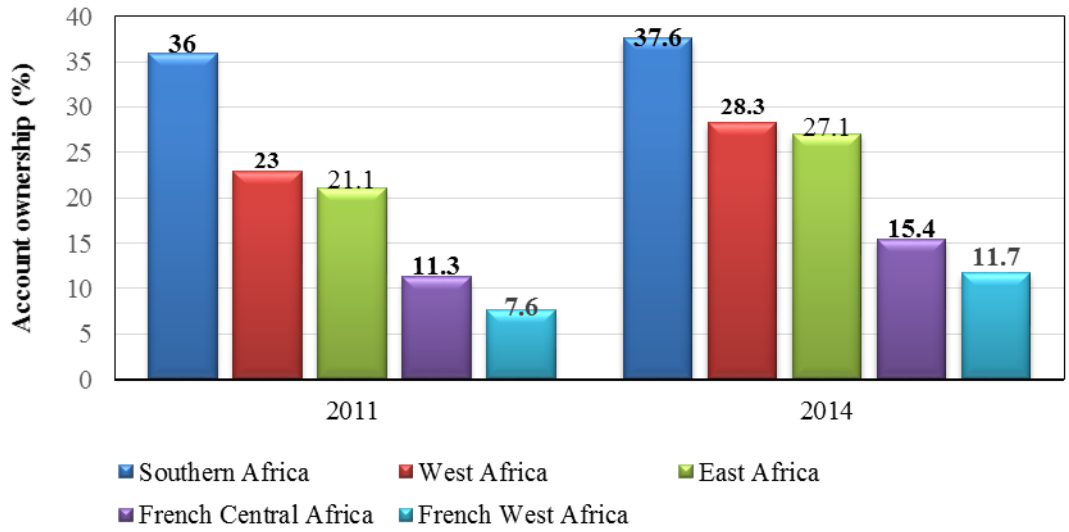
Table 2.1 summarises six basic aspects of financial education that countries should have in place in order to enhance and increase individual understanding and usage of financial services. An interesting observation from Table 2.1 is that all the countries have participated in either one or both of the Global Findex 2011 and 2014 surveys. Apart from Democratic Republic of Congo and Mauritius, the rest of the French-speaking countries have no structures in place to support consumer protection and empowerment relative to their non-French-speaking counterparts. Furthermore, all

French-speaking countries have experienced at least one banking crisis, even though some non-French-speaking countries also experienced banking crises. Hence, the 1980s and late 1990s was a difficult period for many African countries (see Laeven and Valencia, 2013). That is, many countries (except for Mauritius) went through either a banking or financial crisis and because of this bad experience, public trust in the banking sector dwindled, possibly causing some not to use formal financial services. Based on the theoretical linkages discussed in Section 2.2, the risk to financial stability and consumer exploitation might be higher in French-speaking African countries than non-French-speaking due to lack of institutional structures to protect consumers. Principle 5 of the G20 High Level Principles on Financial Consumer Protection states explicitly that all stakeholders should promote financial education and awareness. Furthermore, clear information on consumer protection, rights to recourse and responsibilities for using financial services should be easily accessible to consumers (World Bank, 2014a: 29). This implies that countries with none of the six institutional structures to support consumer financial education in operation have failed Principle 5 of the G20 High Level Principles on Financial Consumer Production. Therefore, the lack of effective financial education strategy suggests consumers will not fully benefit from the opportunities offered by modern financial systems and the level of financial inclusion will be low as observed in French West and Central African countries.

2.3 ACCESS TO FORMAL SERVICES – ACCOUNT OWNERSHIP

Although some progress has been made to improve access for the unbanked in SSA about 64% of adults, representing 350 million adults are still without basic financial products such as a transaction account. Figure 2.1 illustrates account penetration across five regions in SSA between 2011 and 2014.

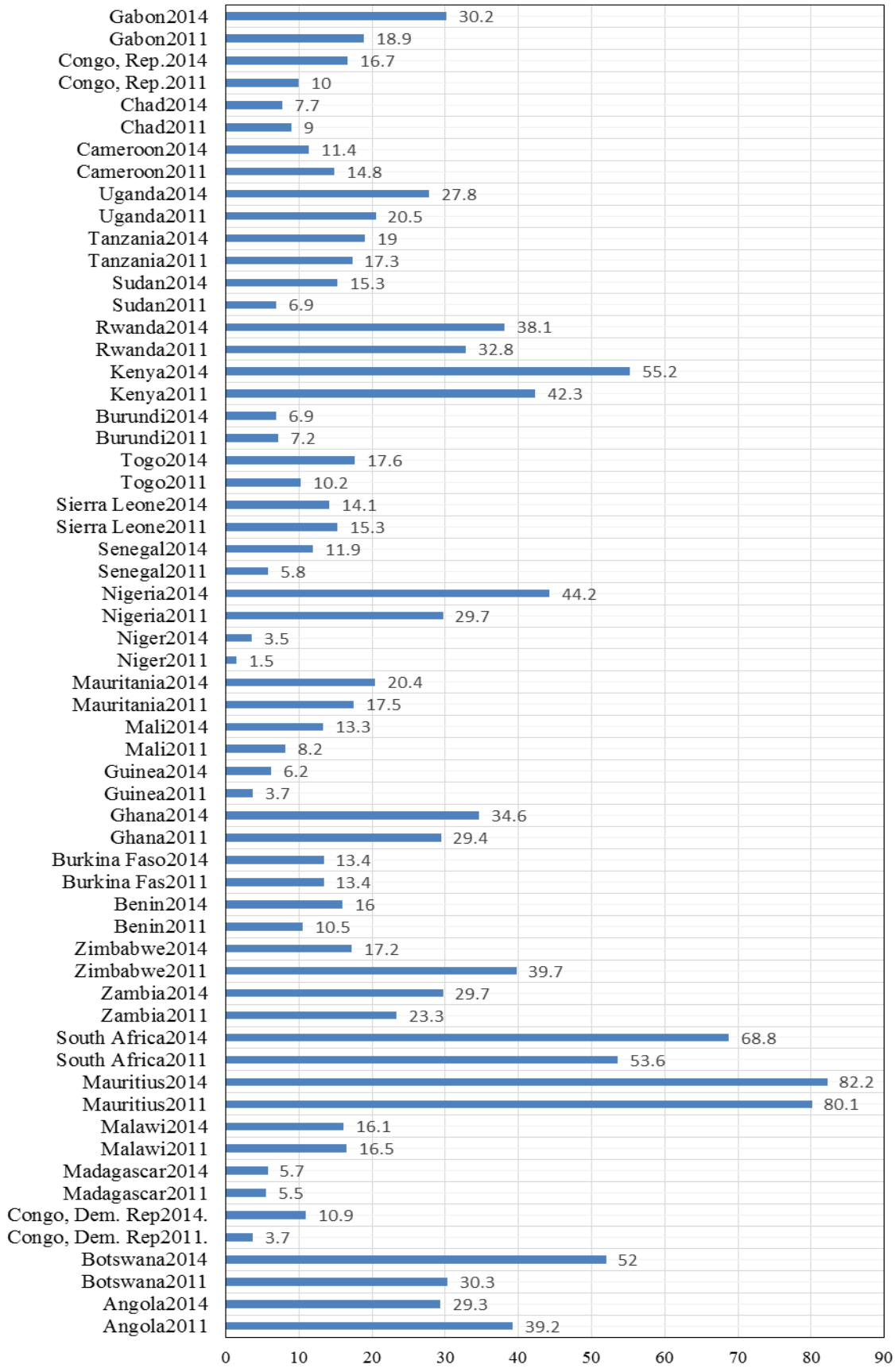
Figure 2.1: Account ownership by regions



Source: Author's calculation using Global Findex 2011 & 2014

In order to understand the pattern of account ownership across regions, French-speaking West African countries are separated from non-French-speaking. Figure 2.1 captures this information and shows that account ownership is highest in Southern Africa, with 36% and 37.6% respectively in 2011 and 2014 relative to any other region. French West and Central African countries have the lowest level of financial inclusion in SSA, and this is obvious from lack of institutional structures to support, empower and enhance consumers' understanding. At country level, account penetration varies significantly and countries with the lowest level of financial inclusion are mostly from French-speaking African countries. Figure 2.2 depicts this information.

Figure 2.2: Accounts at formal financial institutions in SSA

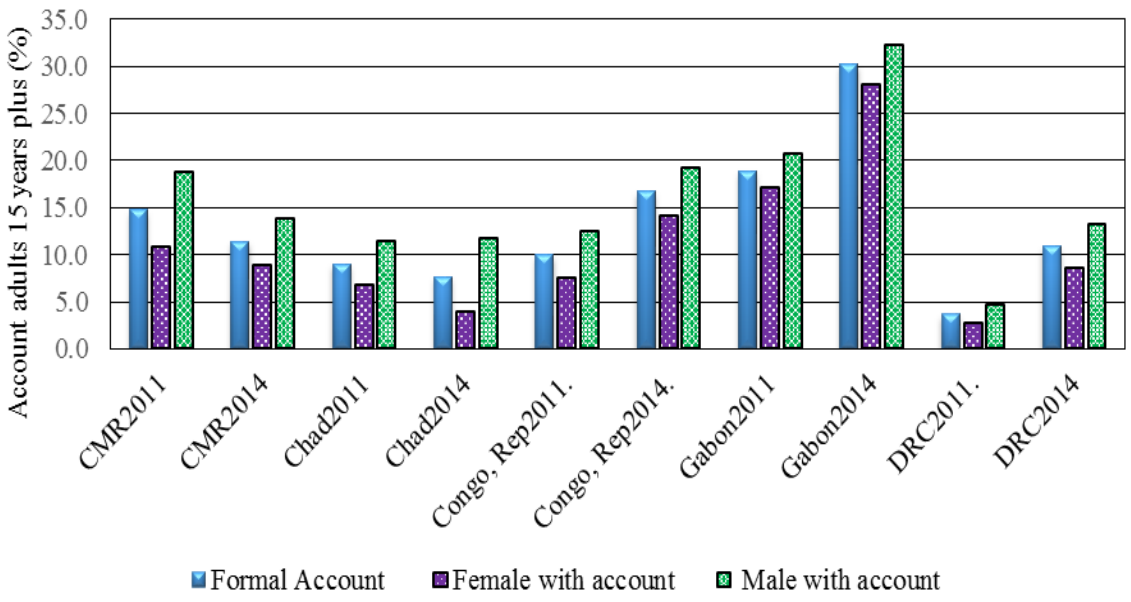


Source: Global Findex, 2014

With the exception of Mauritius and Rwanda, with average account ownership of 82% and 35.5% between 2011 and 2014 respectively, the rest of the French-speaking countries (Benin, Niger, Cameroon, Chad, Togo, Guinea, Mali, Madagascar, Burkina Faso, Congo Republic, Democratic Republic of Congo, Senegal and Burundi) have a very low level of financial inclusion. However, some non-French-speaking African countries, such as Sierra Leone, Malawi, Sudan, Mauritania, Tanzania and Uganda, have low levels of financial inclusion but they perform relatively better than the French-speaking countries.

Furthermore, when account ownership is analysed per country across regions, countries in Central Africa show evidence of gender discrimination in access to formal financial services compared to other regions. Figure 2.3 shows some evidence of gender discrimination with some degree of severity observed in Chad. Apart from the Democratic Republic of Congo (DRC), none of these Central African countries have financial consumer protection structures in operation and all the countries have experienced a banking crisis between the 1980s and 2000s (see Table 2.1 column 8). This raises the issue of consumer trust in the banking sector and is a likely reason for the low level of financial inclusion in Central Africa.

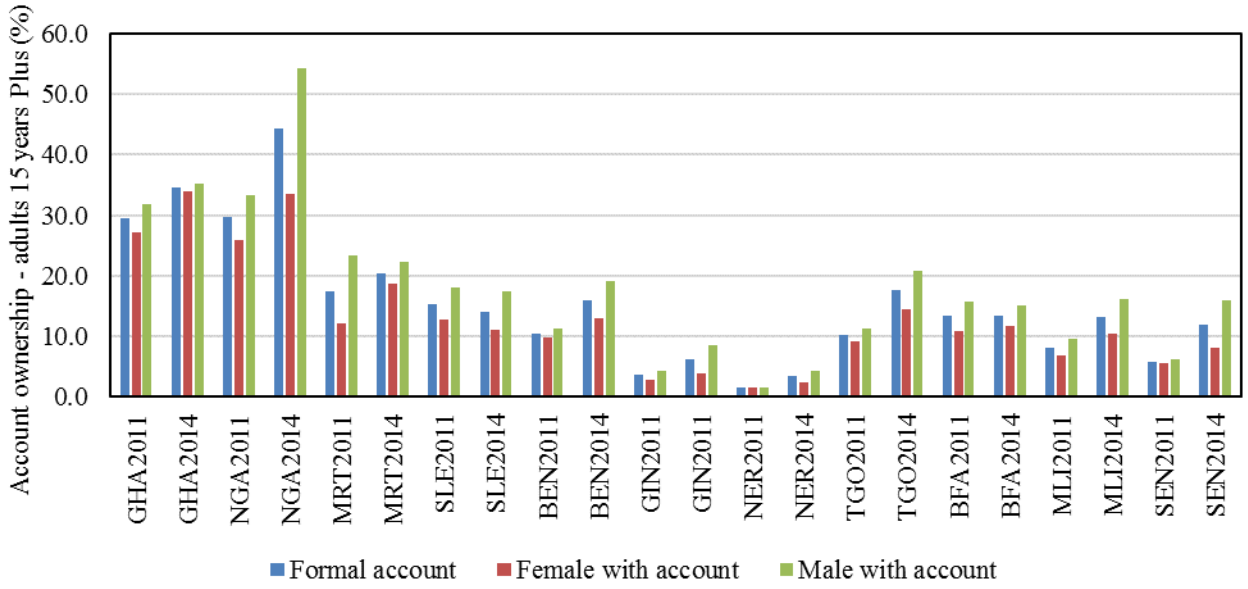
Figure 2.3: Account ownership in Central Africa



Source: Global Findex, 2014.

For West Africa, there is some emerging evidence of gender discrimination observed in Benin, Nigeria, Mali, Senegal, Sierra Leone and Togo. Figure 2.4 depicts this information.

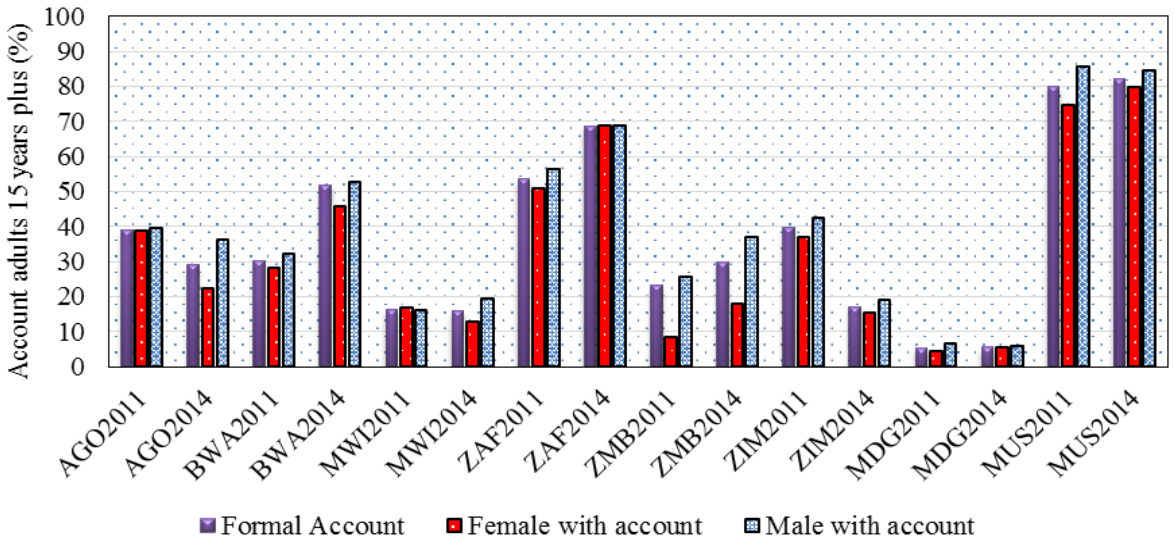
Figure 2.4: Account ownership in West Africa



Source: Global Findex, 2014

Among the few countries that showed evidence of gender discrimination, the severity of discrimination is highest in Nigeria with a gender gap of about 20.7%. Mauritania and Sierra Leone showed a gap in 2011 however, the gap narrowed by 2014. Meanwhile, in the Southern African region, access to account ownership seems to be equitable with exceptions in Angola, Botswana, Malawi and to a lesser degree Mauritius (see Figure 2.5).

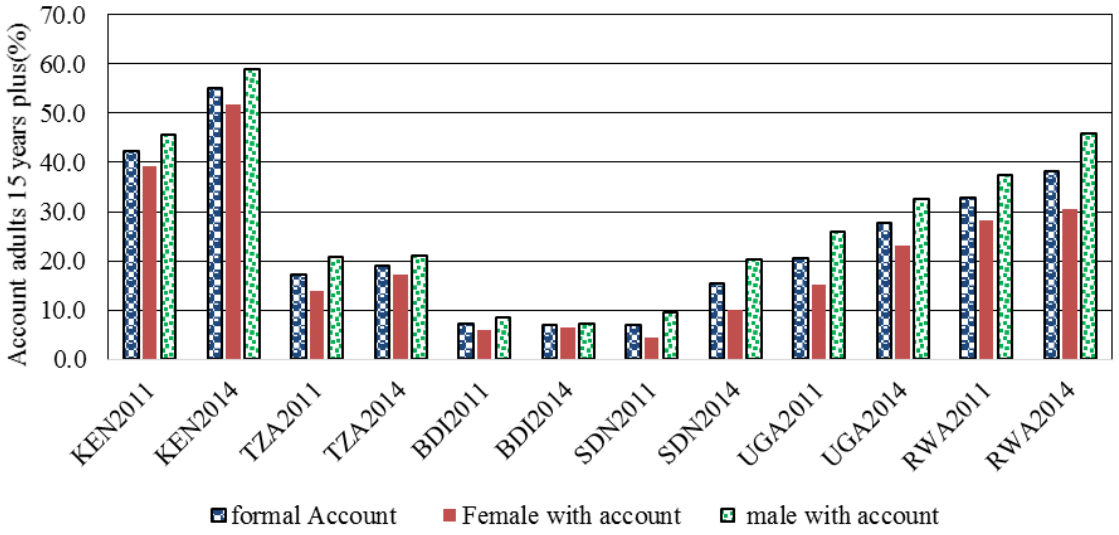
Figure 2.5: Account ownership in Southern Africa



Source: Global Findex, 2014

Finally, gender access to formal accounts in East Africa also suggest that Kenya, Rwanda, Sudan and Uganda discriminate in terms of account ownership, however, the extent of discrimination is less in Kenya than in other countries in the region. Overall, the evidence on accounts in SSA suggests some gender gap in access in Rwanda (15%), Sudan (10%), Uganda (10%), Botswana (11%) and Nigeria (20.7%) by 2014. The gender gap in countries in Central Africa is less than 10% in most cases.

Figure 2.6: Account ownership in East Africa



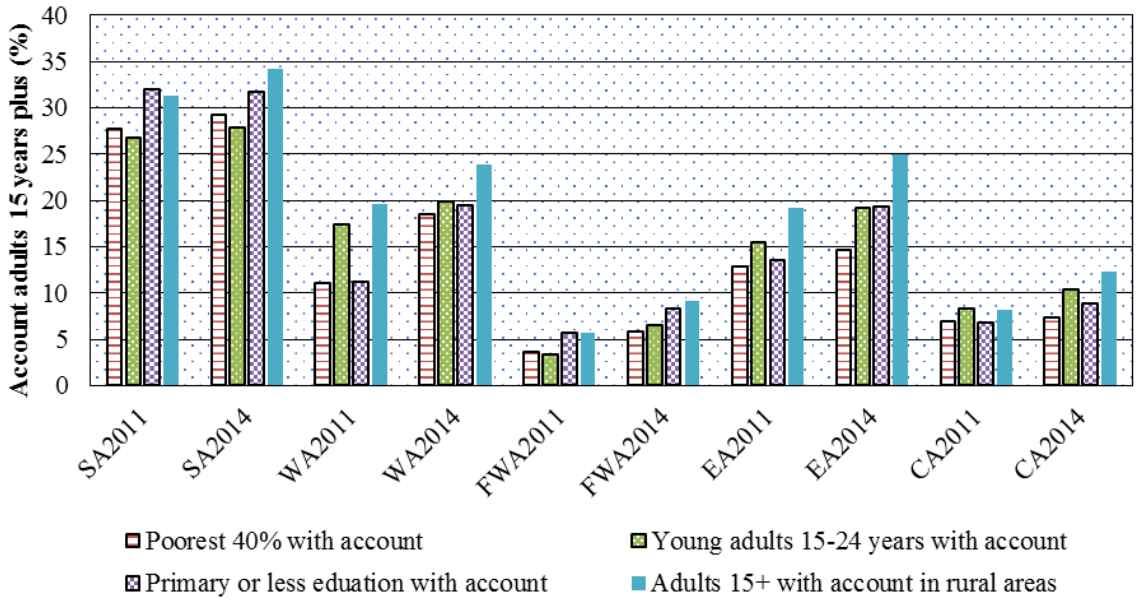
Source: Global Findex, 2014

After analysing account ownership by gender, we turn to the account ownership by the 40% poorest, young adults, those with primary or less education and rural dwellers. This can be termed the disadvantaged group, as they constitute the vulnerable segment of the population that the traditional formal banking sector considers risky to do business. Figure 2.7 depicts account ownership across regions disaggregated by population segments. The evidence illustrates that account penetration by this segment is on average higher in Southern Africa (SA), followed by East Africa (EA) and West Africa (WA), whereas French-speaking West Africa (FWA) and French Central Africa (CA) have the least inclusive financial sector. An interesting observation from Figure 2.7 is the steady increase into the formal financial system in Southern, East and West Africa and to some degree in Central Africa of the 40% poorest, those with primary or less education, young adults and rural dwellers. According to Kelly and Rhyne (2013: 4-6), rising real incomes among the poor is moving millions of poor out of poverty, and if this claim is true it will create new demands for formal financial services. However, this will depend on the ability of financial service providers to design financial products that will meet the specific needs of the newcomers. Kelly and Rhyne (2013) envisage a transition from the usage of informal to formal financial services because of

income growth from less than US$1 a day to more than US$2 a day and this creates a new income class. Literature refers to this group as the *vulnerable middle class*[6] because they are not quite poor but not quite rich enough to be classified as middle class according to OECD standards. However, with continuous rising real income, the vulnerable middle class will transition permanently into the middle class. Although it represents an opportunity to expand financial services, it also poses challenges for regulators.

The task will be to ensure responsible financial inclusion where credit extension takes into consideration the ability of individuals to pay as well as the establishment of empowerment programmes such as consumer education and dispute resolution mechanisms. Figure 2.7 suggests that account ownership by the 40% poorest, primary or less education, rural dwellers and young adults 15-24 years is highest in Southern Africa, followed by East and West Africa, while Central Africa and French West Africa come last. Consequently, as the formal financial sector increases access to this segment, infrastructure should equally follow suit to ensure newcomers are protected from abusive and aggressive practices of some service providers.

Figure 2.7: Account ownership: 40% poorest and underserved



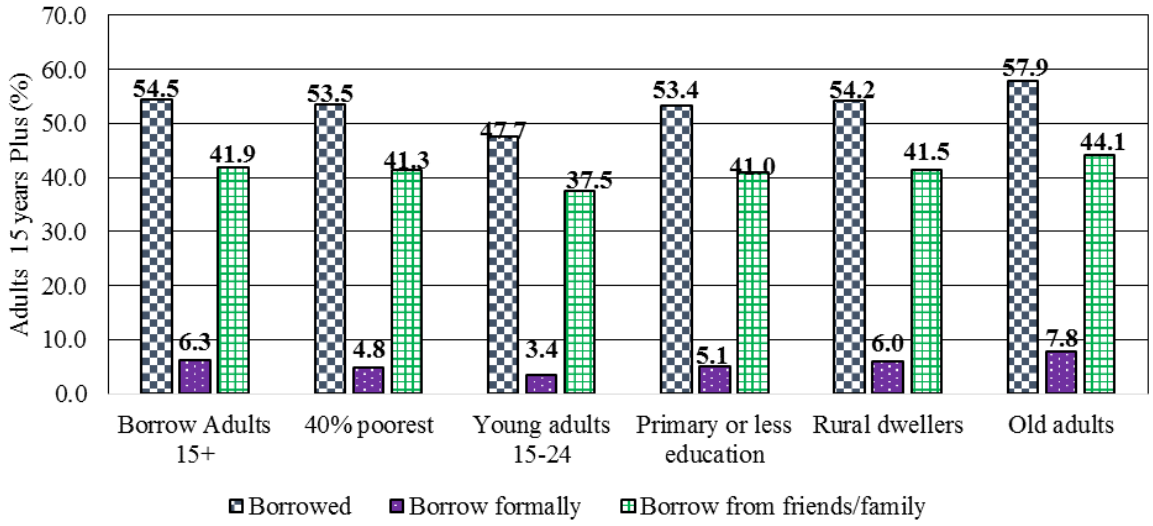
Source: Author's calculation using Global Findex 2011 & 2014

[6] The vulnerable middle income group are not wealthy enough to be out of the danger of falling below the poverty line but have incomes that is barely above subsistence levels (Kelly and Rhyne, 2013: 7).

2.4 USAGE OF FINANCIAL SERVICES – CREDIT

A key aspect of financial inclusion is the ability of account holders to use their accounts to save, borrow, receive remittances and make payments. The Global Findex 2014 added further questions to gauge the proportion of adults around the world that have initiated a new loan in the past 12 months. Figure 2.8 depicts the responses for all the SSA countries that participated in the survey. During 2014, on average about 55% of adults 15 years and above borrowed money in the past 12 months, of which about 41% borrowed from friends and family while only 6% borrowed formally. Across the various population segments, there is a growing demand for financial services in SSA and on average about 50% of the bottom 40% poorest, young adults aged 15 to 24, those with primary or less education and rural dwellers have initiated a loan in the past 12 months. The proportion of these demands met by the formal financial sector is under 6% across these market segments. Hence, restricted access to formal financial institutions such as commercial banks has made borrowing from friends and family an important source to many individuals in SSA.

Figure 2.8: Borrowing by market segments in SSA in 2014

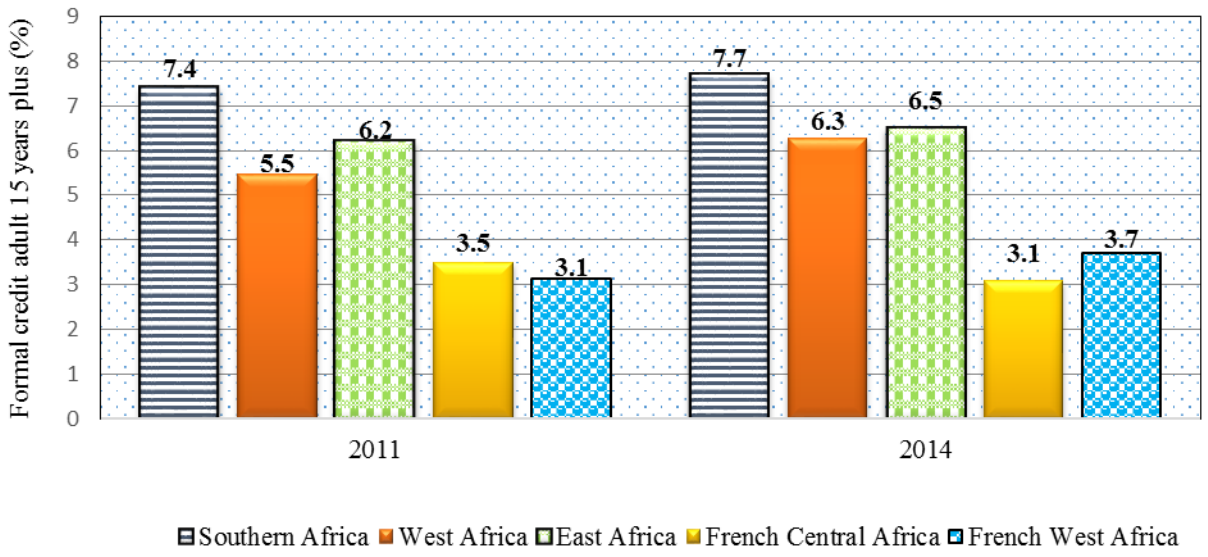


Source: Global Findex 2014

Within SSA, significant variation exists between regions on the proportion of adults with access to formal credit. Access to formal credit for individuals across the regions increased marginally between 2011 and 2014. For example, the proportion of adults with formal credit in Southern, East and West Africa between 2011 and 2014 is below 8%, whereas in French West and Central Africa the figure is below 4% for the same period. This suggests evidence of underdeveloped financial systems in the French-speaking West and Central African countries if one measures financial development using credit extension. Further, linking access to formal credit with financial consumer

protection shows that French West and Central African countries have about two times less access to formal credit than other regions (see Figure 2.9).

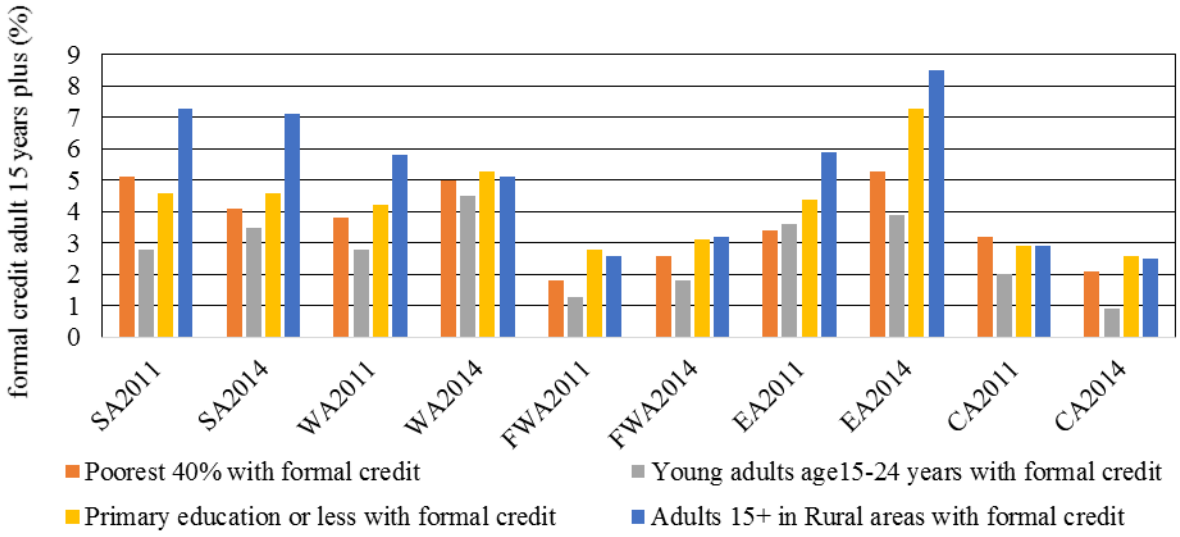
Figure 2.9: Usage of formal credit across SSA regions: 2011 and 2014



Source: Author's calculation using Global Findex 2011 & 2014

Furthermore, access to formal credit is disaggregated into the 40% poorest and the previously disadvantaged – young adults aged 15 to 24, less than primary education and rural dwellers. Figure 2.10 displaced this information and showed clearly that great variations exist across regions in terms of improving access to formal credit between 2011 and 2014 to the 40% poorest and underserved. Southern, East and West Africa have experienced some improvement in credit access across the population segment relative to French-speaking West and Central Africa. The improved access to credit for rural dwellers in Southern and East Africa is due certainly to innovation and the success of technological advancement in financial service delivery such as mobile money in these regions. Furthermore, of importance is the continuous improvement in access to formal credit for young adults that reflects financial sector response to life cycle events and demographic transition. For example, some of the young adults may be borrowing to pursue further studies, others are graduates seeking to establish small enterprises as well as to acquire assets and start living. As noted earlier, sustainable financial inclusion requires that the necessary financial infrastructure be in place to support healthy financial intermediation. However, this is a big challenge for SSA as the Africa Development Bank (AfDB, 2010: 7) estimates the gap in financing infrastructure in Africa to be about US$93 billion per year over a decade depending on the size of GDP growth.

Figure 2.10: Usage of formal credit: 40% poorest and underserved in SSA regions

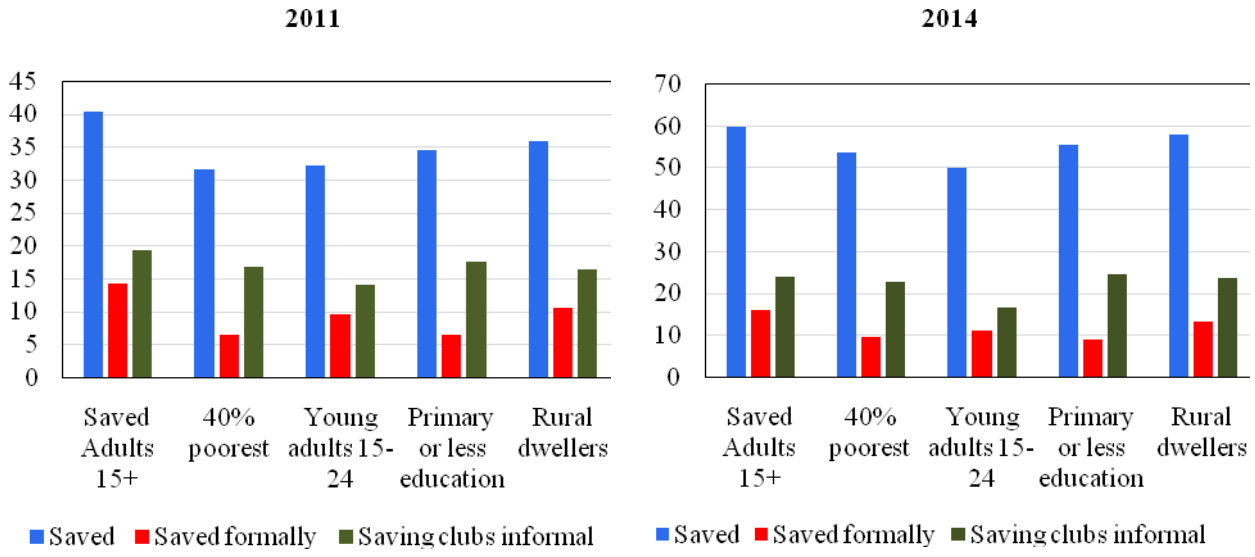


Source: Author's calculation using Global Findex 2011 & 2014

2.5 USAGE OF FINANCIAL SERVICES – SAVINGS

Although poverty and inequality of income is persistent in SSA, the proportion of adults who reported saving some money in the past 12 months is high. According to Global Findex (2014), SSA is the second after East Asia and Pacific and high-income OECD countries in terms of saving rates. Between 2011 and 2014, the proportion of people aged 15 plus who reported saving money in SSA increased from 40% to 60%. However, formal saving increased by 2% from 14% in 2011 to 16% in 2014. Furthermore, across the population segment, the 40% poorest, young adults, rural dwellers and those with primary or less education exhibited a positive saving rate between 2011 and 2014. This difference in reported saving rate and those who actually saved formally suggests huge unmet demands for saving facilities in SSA, indicating massive opportunities for financial services expansion (see Figure 2.11). The proportion of adults who save formally in SSA on average increased in 2014 across the market segment although informal saving clubs also showed a positive trend across all the market segments. However, the picture looks different at country level and regions within SSA, as discussed in Figures 2.9 and 2.10. Next, we examine the pattern of saving across regions.

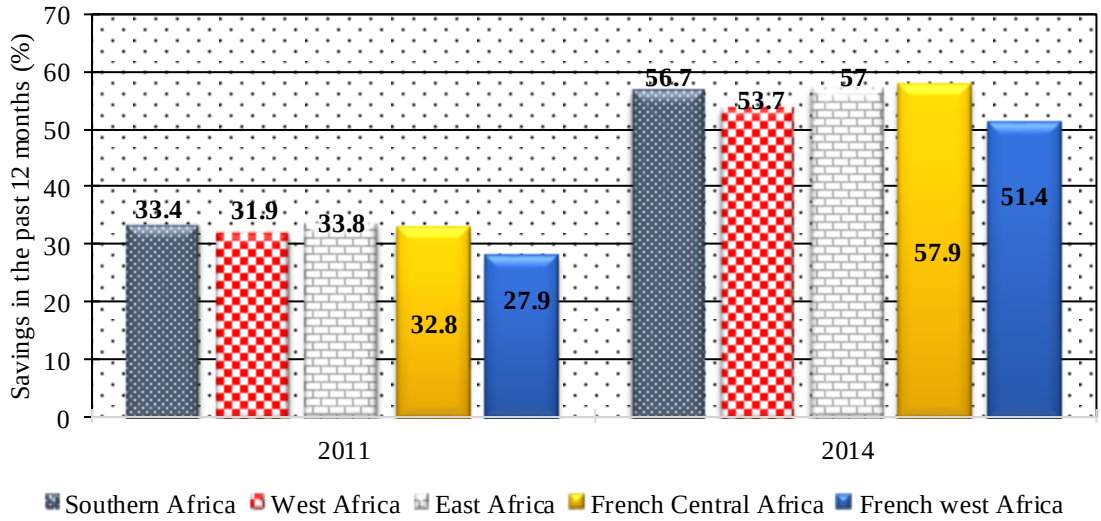
Figure 2.11: Formal and informal saving by market segment in SSA



Source: Global Findex 2014

Figure 2.12 again shows that saving across the regions has increased steadily from an average of about 32% in 2011 to about 54% in 2014 across the regions. The proportion of adults who reported saving some money in the past 12 months increased about 23% across all regions by 2014. Surprisingly, only small fractions of these savings are intermediated through the formal financial sector in these regions (see Figure 2.13).

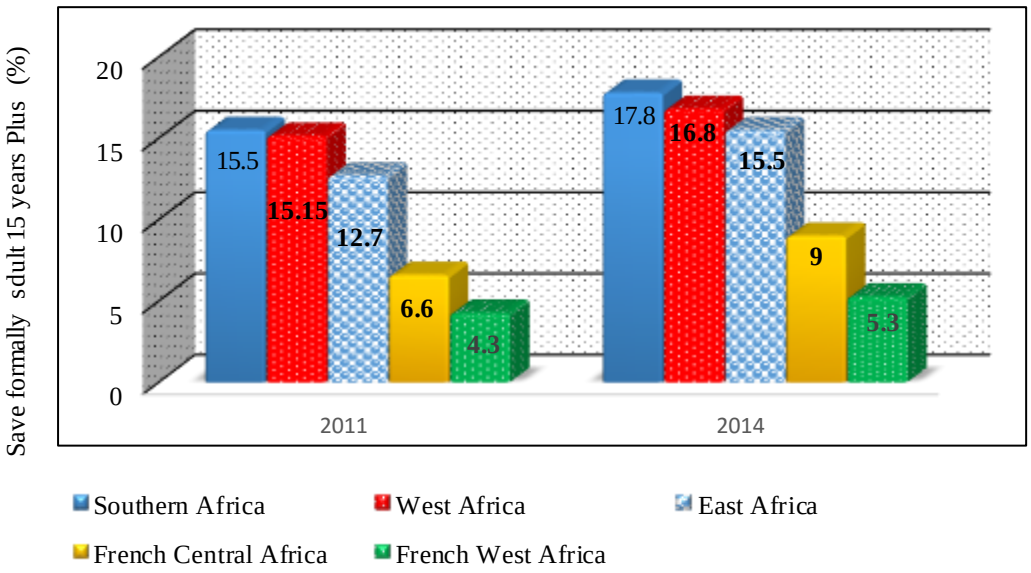
Figure 2.12: Save money in the past 12 months by regions in SSA



Source: Author's calculation using Global Findex 2011 & 2014

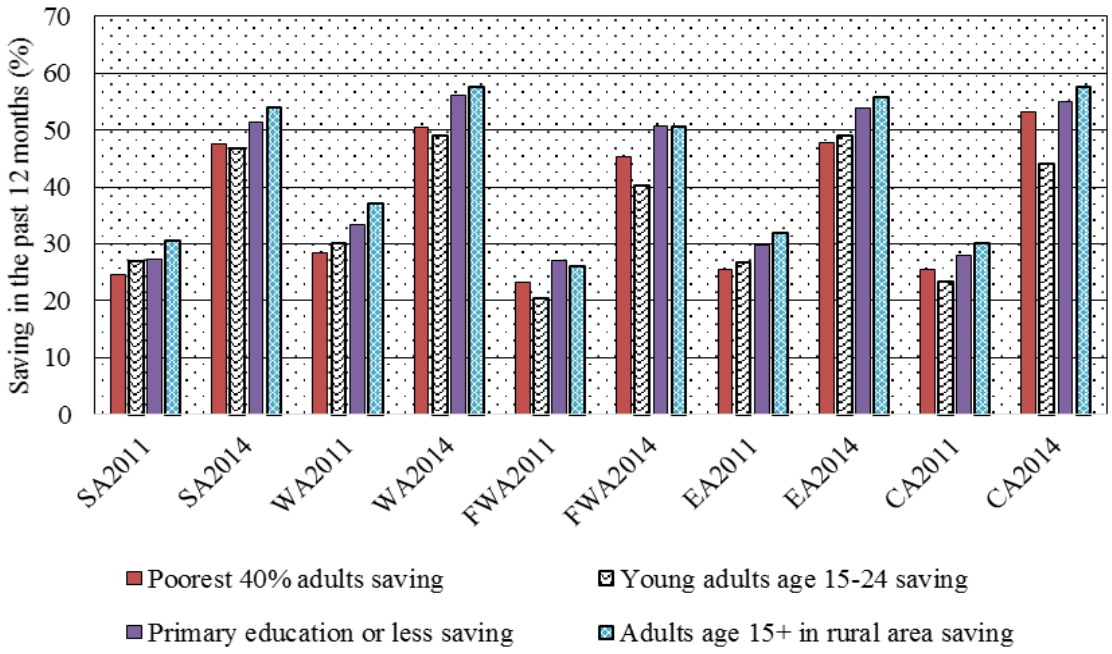
Following from Figure 2.12, we also analysed the proportion of saving that was intermediated through the formal financial sector across the regions. Thus, Figures 2.12 and 2.13 connect with Figure 2.9 to gauge the level of financial sector efficiency to mobilise resources and channel them into productive activities. Southern, West and East African countries performed relatively well compared to French-speaking West and Central Africa in this regard. Overall, the level of financial intermediation in SSA is low as a huge amount of under-utilised resources lie idle somewhere in the informal sector: banks should mobilise and channel this into productive activities to support economic growth (Figure 2.12). It is evident from Figure 2.13 that on average less than half of the adults who reported saving money in the past 12 months across the regions save formally. This gives a strong signal of high usage of informal saving mechanisms probably because of lack of trust in the banking sector resulting from banking crises, particularly in French West and Central Africa. The patterns of saving across regions in SSA can further be disaggregated by market segments. Figure 2.14 depicts this information.

Figure 2.13: Formal saving across SSA by region



Source: Author's calculation using Global Findex 2011 & 2014

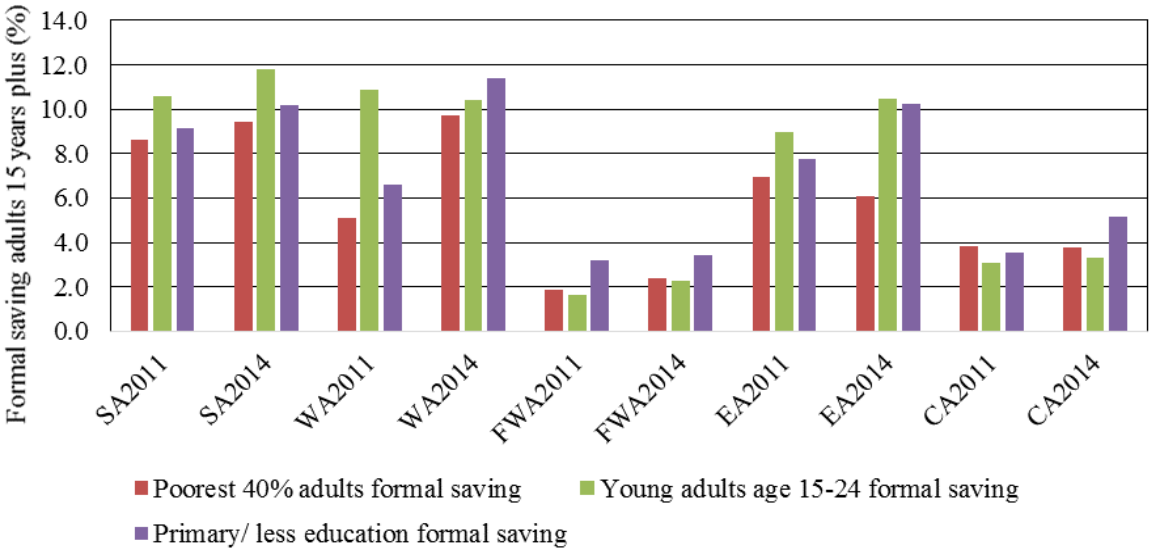
Figure 2.14: Save in the past 12 months: 40% poorest and underserved across SSA regions



Source: Author's calculation using Global Findex 2011 & 2014

Furthermore, by zooming on the 40% poorest and the underserved across all regions, a positive trend emerges between 2011 and 2014 (Figure 2.14). Savings by rural dwellers are relatively higher than the 40% poorest across all the regions but almost similar to those with primary or less education. This may be due to limited access to formal credit facilities in the rural areas, prompting people to build buffers against unexpected shocks. Also interesting is the rising proportion of young adults saving across all regions, reflecting a demographic shift and increased demand for saving facilities to manage lifecycle events. This group represents a strategic target market for financial services: however, evidence suggests greater proportions of their demands are unsatisfied by the formal financial sector in SSA (Figure 2.15). Furthermore, the 40% poorest can be divided into 20% poorest and the second quartile of 20% poorest which is referred to as the vulnerable middle class (Kelly and Rhyne, 2013). Understanding the need of these groups can enable more uptake and usage of formal financial services. Figure 2.15 depicts the fraction of adults who save formally across all regions and by this market segment within each region.

Figure 2.15: Formal saving-40 percentage poorest and underserved across SSA regions



Source: Author's calculation using Global Findex 2011 & 2014

Figure 2.15 suggests that a significant fraction of the 40% poorest and underserved who reported saving money in the past 12 months, save outside the formal financial sector, usually using informal mechanisms. That is, from the high reported saving rate (Figure 2.14), just between 10 to 12% is saved formally in Southern, West and East African countries. Meanwhile, in French-speaking West and Central Africa, formal saving is between 1.9% to 5%. The increased integration of the 40% poorest and underserved may reflect the outcome of a successful technological innovation in the delivery of financial services: mobile money accounts, kiosk and agent banking through supermarkets outlets in Southern Africa.

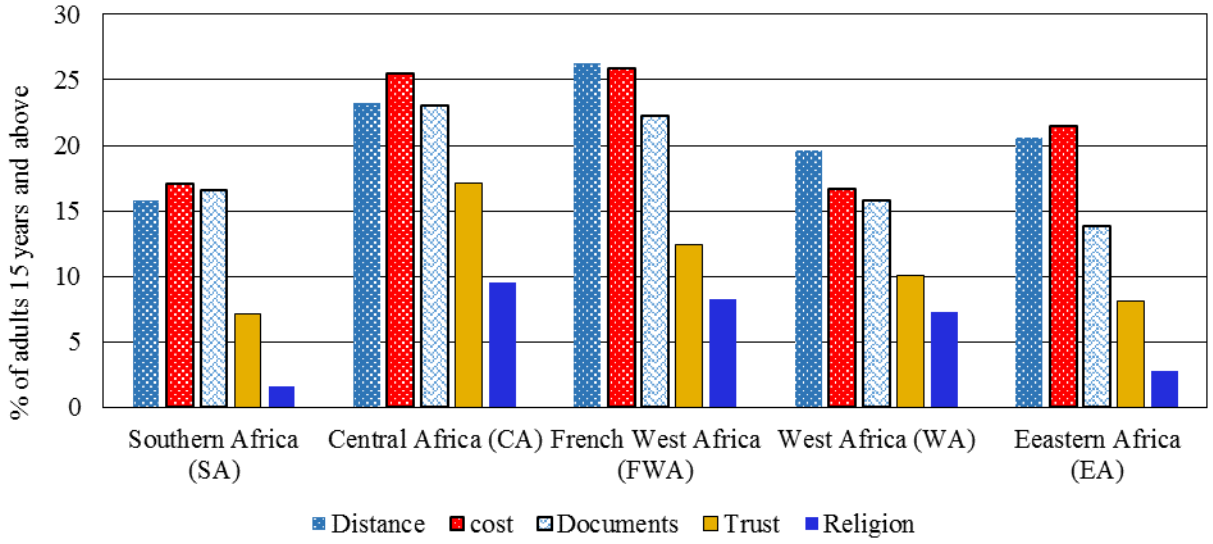
Figures 2.14 and 2.15 suggest that majority of individuals in SSA rely on the informal financial sector to satisfy their saving demands. This not only reduces the ability of individuals to build assets, manage their risk and plan for their future but also impinges negatively on the effectiveness of monetary policy. Informality makes the use of the interest rate as an instrument of monetary policy under a flexible exchange rate system difficult because more money circulates as cash outside the banking system. Efforts to regulate the economy using expansionary and contractionary monetary policy may become increasingly ineffective. For example, an increase in interest rates to cool down the economy will not deter informal borrowers from borrowing, and a reduction in interest rates to stimulate the economy will not encourage informal lenders to lower lending rates, because informality operates outside the regulatory environment.

This patterns and trends represent the diverse nature of economies in SSA. Access to the formal financial sector seems to be more restricted in French-speaking West and Central Africa than in other regions, suggesting financial sector underdevelopment. Nigeria, the most populous country in

West Africa, alone contributes about 28% of the unbanked population in SSA. That is, only 44.2% of the over 96.6 million adults 15 years and above reported having an account at a formal financial institution, implying that about 54 million adults are unbanked (Global Findex, 2014). This represents a huge market for the expansion of financial services.

Barriers to the use of formal financial services also vary across the region. According to Kempson and Whyley (1999), people can be excluded from the formal financial sector because of the places they live, cost and suitability of financial products, lack of knowledge and marketing of financial services. Within SSA, great variation exists in terms of the structure of the economies, level of financial sector development and geographical access to financial services. We analysed five major barriers to financial access to understand their variation across regions in SSA as of 2014. Figure 2.16 depicts this information and shows that religion is not a major barrier to formal financial access in Southern and East Africa. However, religion seems to be a barrier in French West Africa, Central and West Africa as the proportion of people who report religion as a barrier ranged from 7.3% in West Africa to 8.2% and 9.5% in French West and Central Africa respectively. Furthermore, the proportion of people who report lack of trust as a barrier to access financial institutions ranged from 10.1%, 12.4% to 17% in West Africa, French West and Central Africa respectively. This is higher than 7% and 8.1% in Southern and East Africa. This suggests that using banking agents as a model for financial inclusion in French West and Central Africa may be challenging unless financial institutions invest in training suitable qualified agents from their communities to instil public trust in the banking sector.

Figure 2.16: Barriers to financial inclusion across regions in SSA – 2014



Source: World Bank, 2016

Furthermore, high documentation requirements, costs and distance from home to financial services outlets are major barriers across all the regions. This is likely aggravated by the rural nature of countries in SSA, with more than 62% of the total population in SSA living in rural areas (World Bank 2014b). In addition, rural areas are deficient in infrastructure, particularly concerning access to electricity. A report by Tanguy (2010: 34) showed that the rate of rural electrification in SSA is only 40%, suggesting that about 226 million Africans living in rural areas have no access to electricity. This skews access to financial outlets such as bank branches and automatic teller machines (ATMs) which are concentrated in urban areas and thus increases the usage of informal financial mechanisms by rural dwellers as shown in Figure 2.11.

The mode through which individuals across the regions in SSA get access to their funds varies depending on availability of financial outlets and the level of financial sector development. People can access their accounts at the nearest bank branches, agents, mobile account, ATMs or supermarket retail outlets. In Central Africa, withdrawal rates at ATMs are low: about 6% in Cameroon and Congo in 2011 and 37% in Gabon in 2014. Other modes such as agents, retail stores and mobile accounts are rarely used. Withdrawals at bank branches with the help of a teller dominate, ranging from 50% with a maximum of 81% in Cameroon in 2011. For West Africa, cash withdrawals at ATMs are gradually rising. Nonetheless, Benin has the lowest rate (0.8%) followed by Togo with less than 10%, whereas Nigeria is the leading country in West Africa with about 71% ATM withdrawal rates. Withdrawals using mobile accounts are growing faster than agents and retail stores. Ghana and Mali have above 10% mobile account withdrawal rates, and other countries in the region have less than 10%. Meanwhile, getting cash from tellers at bank branches in West Africa is high and ranged from 21% in Nigeria in 2011 to 92% in Benin in 2014 (Global Findex, 2014).

Southern and East Africa have the highest ATM withdrawal rates: above 38%, the only exception is Rwanda, where ATM withdrawal rates are 2.5%. The proportion of people who get cash from tellers at bank branches in Southern and East Africa is lower than in Central and West Africa. However, Rwanda has above 80% withdrawal rate at bank branches with the help of a teller. Malawi follows with above 50%, and in Angola, the proportion increased from 38% in 2011 to 60% in 2014. Finally, few people get cash from their accounts using agents and retail stores with the exception of Kenya and Rwanda where 8% and 13% get cash through agents. Compared to Central and West Africa, mobile account withdrawal rates are high in Southern and East Africa, with countries such as Botswana, Zimbabwe, Kenya, Tanzania and Uganda reporting 20% to 58% mobile account withdrawal rates. Countries such as South Africa, Zambia and Rwanda report rates of above 10% (Global Findex, 2014). Hence, modes of access to funds correlate with the level of

financial development proxied by availability of ATMs, retail outlets and mobile money accounts. Using this as a guide, regions can be ranked according to financial sector development as follows: Southern Africa followed by East, West and Central Africa.

2.6 CONCLUSION

The main objectives of this chapter were firstly to demonstrate the linkages between financial inclusion and the other core aspects of the financial system – financial stability, financial integrity and financial consumer protection. Secondly, to give a detailed comparative descriptive analysis of three aspects of financial inclusion across five regions in sub-Saharan Africa, namely Southern, East, French-speaking West, West and Central African regions.

First, emerging evidence suggests that financial inclusion, financial stability, financial integrity and financial consumer protection are interrelated. This implies that attempts to boost one aspect automatically lead to the strengthening of the others. For example, financial inclusion brings more people into the mainstream financial sector, which increases aggregate savings and diversifies the deposits base and loan portfolios of banks. Similarly, financial integrity builds public confidence and trust in the financial sector, encouraging more financial inclusion and increasing the resilience of the financial sector. Finally, when consumers are empowered through financial consumer education, it helps shape attitudes and behaviour towards wise financial decisions leading to household stability. Stability at the household level, in turn, enhances the overall stability of the financial sector, building confidence and trust that can encourage many people to use financial services.

Secondly, the descriptive analysis showed that the overall level of financial intermediation in SSA is low and this can be ascribed to lack of competition among banks and infrastructure deficiency to assist banks to price risk appropriately. Other factors, such as the bad experience of the banking and financial crises in 1980s to 2000s, may have eroded public trust in the banking sector. However, evidence from the descriptive analysis showed that huge unmet demands for credit and savings facilities exist across all regions in SSA. On average, about 54.5% of adults 15 years and above had initiated a loan in SSA by 2014 but only 6% borrowed from the formal sector. Across the regions, the rate of formal saving and borrowing in Southern, East and non-French-speaking West African (Ghana, Sierra Leone, Nigeria and Mauritania) countries is twice as high as the rate in French-speaking West and Central African countries. It also emerges that most French-speaking African countries do not have institutional structures in place to support and empower consumers. Thus, correlating this with the low level of financial inclusion in French-speaking countries confirms the linkage discussed Section 2.2

A strong message emerging from this chapter is that to support financial inclusion, countries and regions should invest in building institutional structures to support consumer empowerment. For the French-speaking West and Central African countries, which lag behind other regions, this should be prioritised to enhance the efficacy of the overall financial system.

This chapter has provided a descriptive analysis of the level of financial inclusion across all the regions in SSA to gauge the level of financial sector development, and serves to set the scene for the empirical chapters. Chapter 3 extends the analysis by examining how financial development as measured by the depth dimension of the financial system relates to welfare in selected countries in Africa, using the Augmented Mean Group developed by Eberhardt and Teal (2010) and Eberhardt (2012) that account for country-specific slope parameters to achieve this objective.

CHAPTER 3
FINANCIAL DEVELOPMENT AND INCOME INEQUALITY IN AFRICA: A PANEL HETEROGENEOUS APPROACH[7]

3.1 INTRODUCTION

Researchers such as Demirgüç-Kunt and Levine (2009) argue that the operation of the financial system has a direct influence on the distribution of economic opportunities among individuals and firms. This implies that the financial system can directly influence the decisions of individuals to engage in economic activities and human capital accumulation. In so doing, the financial system influences the gap between the rich and the poor and the degree of persistence across generations. The descriptive analysis in Chapter 2 showed that the level of financial inclusion varies across all regions in SSA, with French-speaking West and Central African countries having the lowest level of inclusion. This is an indication of the unequal spread of economic opportunities with a possible negative consequence on well-being.

This chapter expatiates on the role of the financial sector development in influencing aggregate welfare (income inequality) across selected number of countries in Africa. Three tested empirical relationships between finance and income inequality exist: Kuznets' (1955) *inverted u-shaped* relationship between GDP per capita and income inequality, Greenwood and Jovanovic's (1990) *inverted u-shaped* relationship between finance and income inequality, and Galor and Zeira's (1993) and Banerjee and Newman's (1993) negative linear relationship between financial development and income inequality. This relationship has recently attracted the attention of scholars and policy makers because of the negative effects of growing income inequality such as the erosion of democratic governance, inequality in political representation and increased civil unrest. Widening income inequality can also lead to a multiplier effect of other forms of inequalities such as between men and women (Kumar, 2014; Fuentes-Nieva and Galasso, 2014: 3).

However, empirical studies in this area remain scant despite the growing interest, and the few available studies are mostly from developed economies (Li et al., 1998; Beck et al., 2004, 2007a; Clarke et al., 2006, 2013; Law and Tan, 2009). Findings from these studies suggest that financial development reduces income inequality. From the African continent, this relationship has been constrained by data limitation, and so far only two peer-reviewed papers and a working paper have attempted this relationship (Batuo et al., 2010; Kai and Hamori, 2009; Asongu, 2013). The

[7] This paper has been published as a working paper by ERSA and is under review with the *Journal of Emerging Market Finance*.

empirical methodology employed by most of these studies are fixed effects (FE) and random effects (RE), generalised method of moment (GMM) and instrumental variable (IV) (Batuo et al., 2010; Kai and Hamori, 209; Clarke et al., 2006, 2013). Recently, scholars have criticised the use of these techniques, arguing that when the time (T) and cross-sectional (N) dimensions are large, standard micro-econometrics techniques FE, RE, IV and GMM may yield bias and inconsistent estimates due to the potential of parameter heterogeneity across countries and serial correlation in the regressors (Baltagi, 2008; Pesaran et al., 1999). Furthermore, the process of arbitrary averaging of the data over fixed periods without due consideration of the length of business cycle is unlikely to eliminate business cycle effects since the length of business cycle phases fluctuates and varies across countries. This process may instead induce simultaneity and the estimated parameters can easily change signs and magnitude from the underlying parameter and hence differ significantly (Ericsson et al., 2001: 245; Wan et al., 2006: 656).

This chapter addresses these empirical challenges by employing the augmented mean group (AMG) estimator developed by Eberhardt and Teal (2010) and Eberhardt (2012) to re-examine this relationship in Africa. Specifically, this chapter revisits the long-run relationship between financial development and income inequality in a balanced panel of 15 selected African countries[8] from 1985-2007. We examine whether financial development has an effect on income inequality and whether this effect depends on the level of financial development or the level of economic development. The AMG is a suitable technique for large T and N macro-panel data, accounts for country-specific slope coefficients and is robust to the presence of cross-sectional dependence (Eberhardt, 2012). Thus, Chapter 3 contributes to the body of knowledge from an empirical perspective.

The reminder of this chapter is organised as follows: Section 2 reviews the theoretical and empirical literature and Section 3 provides stylised facts about Africa. Section 4 describes the data and Section 5 specifies the econometric modelling. Section 6 discusses the results and Section 7 draws conclusions.

3.2 THEORETICAL AND EMPIRICAL REVIEW

3.2.1 Theoretical review

Economic theories have different predictions on how financial development can affect income inequality. For example, Greenwood and Jovanovic (1990) predicted that the relationship between financial development and income inequality is an *inverted u-shape*. They developed a model of

[8] Botswana, Côte d'Ivoire, Egypt, Ethiopia, Ghana, Lesotho, Malawi, Mauritania, Mauritius, Morocco, Nigeria, Rwanda, South Africa, Tunisia and Uganda.

economic growth, financial development and income distribution in which financial intermediaries develop to facilitate trade. Trading through financial intermediaries allows both higher and safer returns because intermediaries can pool risk across large numbers of individuals. However, there is a cost associated with investing through intermediaries and these costs are higher at the early stages of economic development because financial intermediaries are at the infancy stage. These high costs constrain investing by the poor through financial intermediaries, only the rich can afford to invest through financial intermediaries at the early stage of development. Hence, during this early stage of economic development, financial intermediaries are virtually non-existent and the growth rate of the economy is slow. As the economy approaches an intermediate phase of economic growth, financial intermediaries begin to develop. At this stage, economic growth and the saving rate in the economy both increase and income inequality between the rich and the poor widens, given that the poor have lower capacity to save and therefore amass wealth at a slower pace. As the economy passes through the early to intermediate stages of economic development, demand for financial services from the real sector grows. The financial sector develop in response to these demands improve efficiency and reduce transaction costs as many people gain access, thus income inequality will start to decline. In the advanced stage of development, financial intermediaries become even more efficient and cost-effective as well as providing greater access to many people. This translates into an *inverted U-shape* relationship, with income inequality rising at the early stage of financial development and falling at the advanced stage of financial development.

The second theory is based on financial market imperfections. Galor and Zeira (1993) developed a two-sector model where income distribution is linked to inheritance between generations and investment in human capital accumulation is indivisible. In the first stage, individuals can decide to invest in human capital and acquire skills or work as unskilled workers. In the second stage, individuals work as skilled or unskilled labourers depending on their level of education, spend their earnings and leave inheritances. In the model, individual inheritance determines whether an individual invests in human capital to become skilled or to remain an unskilled worker. Furthermore, individuals who inherit small bequests can borrow to finance human capital accumulation. Lenders of capital require collateral and borrowing incurs monitoring, supervision and enforcement costs. Consequently, those who inherit sufficient bequests can finance their human capital accumulation without borrowing but those who inherit small bequests need to borrow. Because of financial market imperfections, the poor underinvest in human capital accumulation and end up being unskilled and leaving no inheritances. Banerjee and Newman (1993) developed a model of occupational choice that focused directly on the interplay between the patterns of occupational choices in the process of economic development. In the model, agents receive their

initial wealth at maturity in the form of an inheritance from their parents and they may apply for a loan when economically active, but borrowing requires collateral, because contract enforcement is imperfect and agents can renege on their loan contracts. Because of these capital market imperfections, credit is rationed and people can borrow only limited amounts. Hence, occupational choices that require high initial capital are out of reach for the poor. As such, the poor instead opt to work for wealthier employers as wage earners, thus substituting financial contracts for wage contracts. This breaks down into a situation where the patterns of occupational choices are determined by initial wealth distribution and the structure of the occupational choices in turn determines how much people save and the type of risk they bear. These two theories suggest that when financial markets are perfect the society will achieve social efficiency. That is, brilliant children from poor family backgrounds and poor entrepreneurs with potential to succeed will gain access to capital regardless of their initial inheritance. This translates into a negative linear relationship between financial development and income inequality. However, in the presence of persistent financial market imperfections, schooling and entrepreneurship will be linked to initial inheritance, dynasty connections and networks. Thus, financial development will lead to Clarke et al. (2006) *inequality-widening hypothesis* of financial development.

Kuznets (1955) also suggests that income inequality is related to the sectoral structure of an economy and predicts an *inverted u-shape* relationship between income inequality and economic development. Kuznets (1955) argues that the per capita income in the rural agricultural sector is lower than that in the urban and industrial sectors and that this difference in income causes people to move from rural to urban and industrial sectors. Kuznets (1955) predicts that income inequality will be higher during the transitional phase of an economy from agricultural to pre-industrialisation. However, as the early phase of industrialisation elapses, several forces converge to enhance the economic situation of new migrants within the urban population. Thus, after a while a new generation will be born in the cities and will be able to adapt to city life, gain skills through quality education and hence stand a better chance to secure a high-paying job. This translates into an *inverted u-shape* relationship between income inequality and economic development. Income inequality will rise at the transition phase and decline at the stage of full industrialisation.

In summary, each theory predicts a completely different mechanism through which financial development relates to income inequality. This study will test these predictions to ascertain which one applies in the context of Africa.

3.2.2 Empirical literature

Empirical studies on the finance-inequality relationship started only when the Deininger and Squire's (1996) dataset on income inequality was made available. Even with the availability of

income inequality datasets, empirical evidence remains scant with developed economies dominating available studies. Empirical evidence from Africa is almost non-existent, with only two peer-reviewed papers and a working paper being the known available studies (Kai and Hamori, 2009; Batuo et al., 2010 and Asongu, 2013). One can generally group the studies into two categories based on the econometric methods used. The first group employs panel data techniques in a cross-country analysis (see for instance, Li et al., 1998; Beck et al. 2004 and 2007a; Clarke et al., 2006 and 2013; Rehman et al., 2008; Kappel, 2010). The second group of studies used country-specific time series methods (e.g. Law and Tan, 2009; Law et al., 2014)

One of that earliest studies, Li et al. (1998) examined the Kuznets hypothesis, looking at the international and intertemporal variation in inequality in 49 developed and developing countries from 1947-1994 using analysis of variance (ANOVA), least square dummy variable (LSDV) and random effect (RE). They found income inequality to be stable, while income was rising for the period under study, thus rejecting the Kuznets hypothesis. Their results further suggest that the determinants of income inequality vary only slowly within countries but are significantly different across countries.

Focusing on the finance-inequality relationship, Beck et al. (2004 and 2007a) found that income inequality declines faster in countries with a well-developed financial system. Their results further suggest that well-developed financial systems induce the incomes of the poor to grow faster than the average per capita GDP growth, which lowers income inequality.

In a similarly related cross-country study Clarke et al. (2006 and 2013) investigated the relationship between finance and income inequality in 83 countries from 1960 to 1995 and recently (in their 2013 study) expanded the countries to 91 while maintaining the same period. They employed ordinary least squares (OLS) and GMM in both analyses and in the earlier study, empirical evidence strongly supports the negative linear hypothesis with some weak support for the Greenwood and Jovanovic (1990) hypothesis. Similar support for the negative linear hypothesis were found in the recent study but no support was found for Greenwood and Jovanovic (1990) while there was some modest support for the augmented Kuznets hypothesis.

Rehman et al. (2008) analysed data for 51 countries at different stages of economic growth to understand the factors driving income inequality among these groups of countries and split the data into four different income groups to test the Kuznets hypothesis. They found government spending, the literacy rate and trade openness to be the main factors driving income inequality in low, lower-middle, middle and upper income countries. Their results showed that financial development reduces income inequality regardless of the stages of economic development. They also found support for the Kuznets *inverted u-shape* hypothesis. However, Kappel (2010) found that

government spending reduces income inequality in high income but not in low-income countries. Evidence from regression analysis showed that inequality and poverty are not only reduced through better loan markets but also through well-developed stock markets. The results also identified ethnic diversity and land distribution as key factors driving income inequality.

Recently emerging evidence suggests the existence of a threshold effect of financial development and institutional quality on income inequality. For example, Kim and Lin (2011) employed an instrumental variable threshold regression approach for a panel of developed and developing countries and found evidence of a nonlinear threshold effect of financial development. Their results indicate that financial development (banks and stock markets) will disproportionately help the poor and reduce income inequality only when a country has reached a certain threshold level of financial development. Below such threshold level, financial development will hurt the poor and worsen income distribution. Tan and Law (2012) also found evidence of a below-threshold effect. Their results suggest that financial development will reduce income inequality even at the early stage of financial development but this will only be sustainable below a certain threshold level. This plays out in three phases: a phase where income inequality reduces with financial development, a phase of no change in income inequality with financial development, and the final phase of rising income inequality with further financial development, thus translating into a *u-shape*. Further financial development after the second phase will increase income inequality. Recently, Law et al. (2014) employed a threshold regression approach and found that financial development will reduce income inequality only after a certain level of institutional quality. They concluded that until such institutional quality has been reached, the relationship between finance and income inequality will not exist.

We now turn to studies that focused on African countries. All the studies are cross-country in approach. Kai and Hamori (2009) is the first known peer-reviewed study in Africa that examined the effect of globalisation and financial depth on income inequality in 29 SSA countries from 1980-2002 using fixed and random effect models. Their empirical evidence showed that globalisation worsens income inequality but this effect dampens with economic development of countries. That is, since globalisation is likely to benefit those with some level of education, the equalising effect of globalisation will be higher in countries with high standards of education. Furthermore, they found that financial depth reduces income inequality but its effect declines with globalisation. That is, increased globalisation shifts financial resources towards the rich and hence the gap between the rich and the poor widens.

Batuo et al. (2010) also investigated the effect of financial development on income inequality in 22 African countries from 1980-2004 by testing the various theoretical hypotheses. They found

empirical support for the negative linear hypothesis that financial development reduces income inequality. Meanwhile Asongu (2013) examined the channel through which investment affects inequality and which channels are good for the poor in 13 African countries. The overall result revealed that financial development in Africa does not help the poor. The results showed that financial depth and activity reduces income inequality, whereas financial efficiency increases income inequality, providing support for Greenwood and Jovanovic's (1990) hypothesis. That is, large average loan sizes and deposits per capita are likely to benefit the rich and well-established firms. Gries and Meierrieks (2010) also found in a group of SSA countries that weak institutional quality undermines the effectiveness of financial development to reduce income inequality in the region.

Apart from cross-country studies, there are also single country studies that have examined this dynamic relationship between financial development and income inequality. However, none of these studies looked at African countries. The negative linear hypothesis of Galor and Zeira (1993) and Banerjee and Newman (1993) enjoy overwhelming support from single country studies regardless of the method used in the analysis (see Shahbaz and Islam, 2011; Bittencourt, 2010; Liang, 2006; Hoi and Hoi, 2012). Ang (2010) found that underdevelopment of the financial sector in India hurt the poor more than the rich. Law and Tan (2009) failed to find any statistically significant effect of financial development on income inequality in Malaysia. Instead, they found a statistically significant effect of institutional quality[9] in reducing income inequality. The findings also identified real GDP per capita and inflation that were statistically significant in reducing income inequality. They concluded that maintaining low inflation and improving economic development would reduce income inequality.

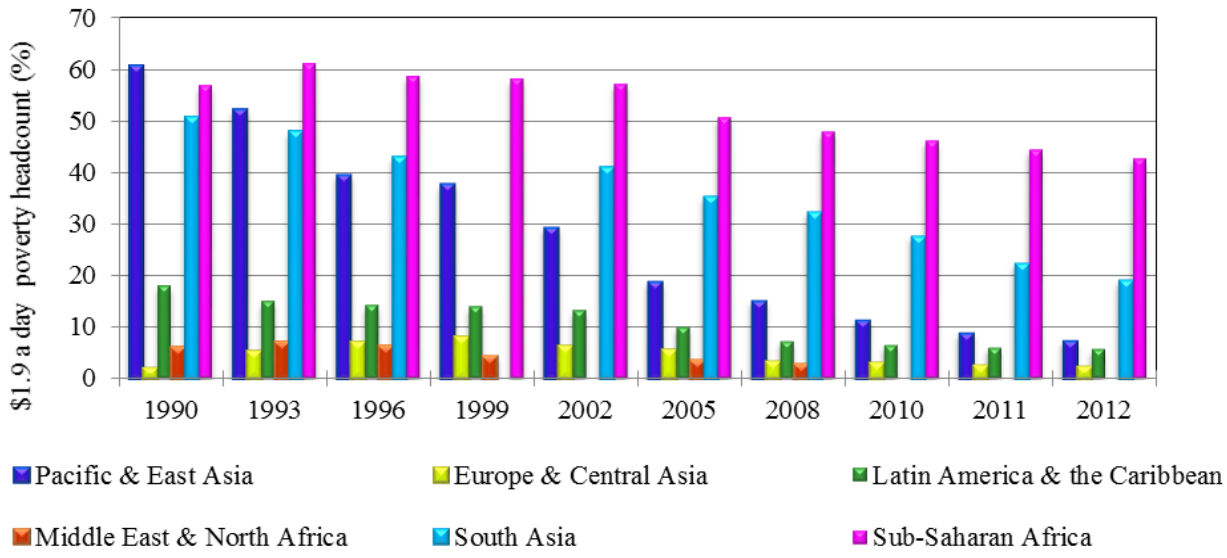
The foregoing review clearly shows that available empirical evidence, although not clear-cut, mostly focused on developed and non-African developing countries. Specifically, there are only two published papers from Africa. Furthermore, apart from single country studies outside Africa that have employed autoregressive distributed lag models (ARDL) in their analysis, most cross-country studies applied the conventional method of data averaging, which is not in line with empirical modelling for heterogeneous non-stationary panel data. This study argues that assuming homogeneity of slope coefficient when in fact the slopes are different may lead to misleading inferences.

[9] Institutional quality refers to five measures of political risk services (PRS): (i) corruption, (ii) rule of law, (iii) bureaucratic quality, (iv) Government repudiation of contracts, and (v) risk of expropriation; and six measures from the World Governance Indicators: a) voice and accountability, b) political stability and lack of violence, c) government effectiveness, d) regulatory quality, e) rule of law, and f) control of corruption.

3.3 STYLISED FACTS ABOUT AFRICA

African countries remain among the poorest countries in the world and are highly unequal, with six out of the ten most unequal countries in the world in 2010 being from Africa (AfDB, 2012: 2). Besides having the lowest average per capita income amongst other regions in the world, SSA has the highest headcount poverty ratios. As shown in Figure 3.1, the headcount poverty ratio, which was 56.75% in 1990, has dropped only by 13.85% over two decades to 42.65% in 2012. In contrast, East Asia and the Pacific and South Asian, which had headcount poverty ratio above 50% in 1990, witnessed a significant drop to 7.21% and 18.75% respectively by 2012.

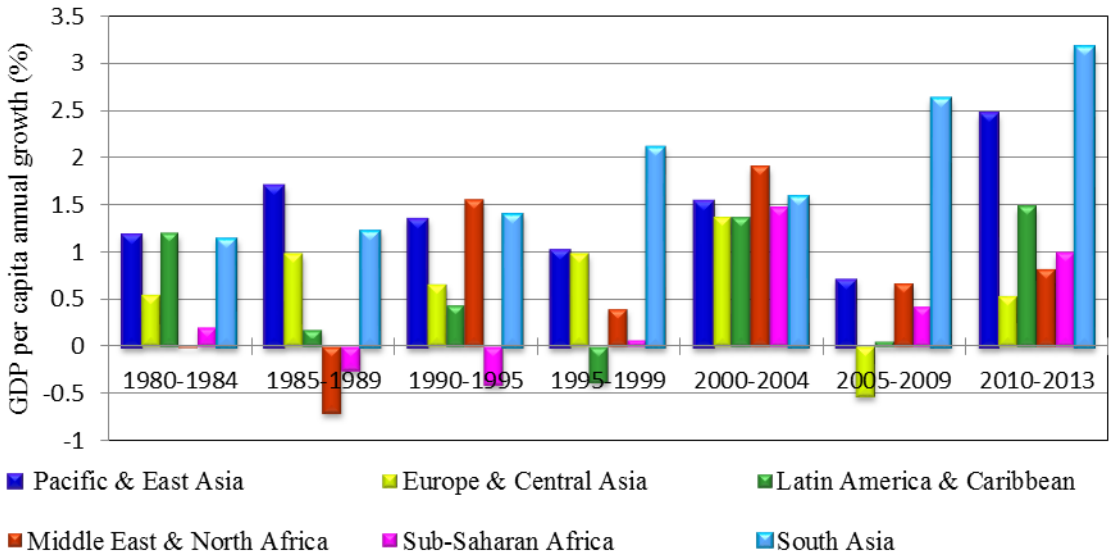
Figure 3.1: Poverty headcount ratio at $1.9 a day (PPP)



Source: PovcalNet, 2014

Secondly, although Africa as a whole has witnessed robust GDP growth for over a decade and a half, living standards of Africans have not improved in line with the growth in GDP. Figure 3.2 illustrates GDP per capita growth over five year intervals across regions. Figure 3.1 connects with Figure 3.2 as regions with a rapid decline in headcount poverty also showed an improvement in living standards. SSA again shows the lowest level of GDP per capita growth, which may suggest that the economic growth experienced over the past decades was not high enough to lower poverty significantly. It could also be because of economic growth being concentrated in the formal sectors while enormous untapped productive resources in the informal sectors remain excluded, thus perpetuating income inequality in the region.

Figure 3.2: Relative standards of living across regions 1980-2013

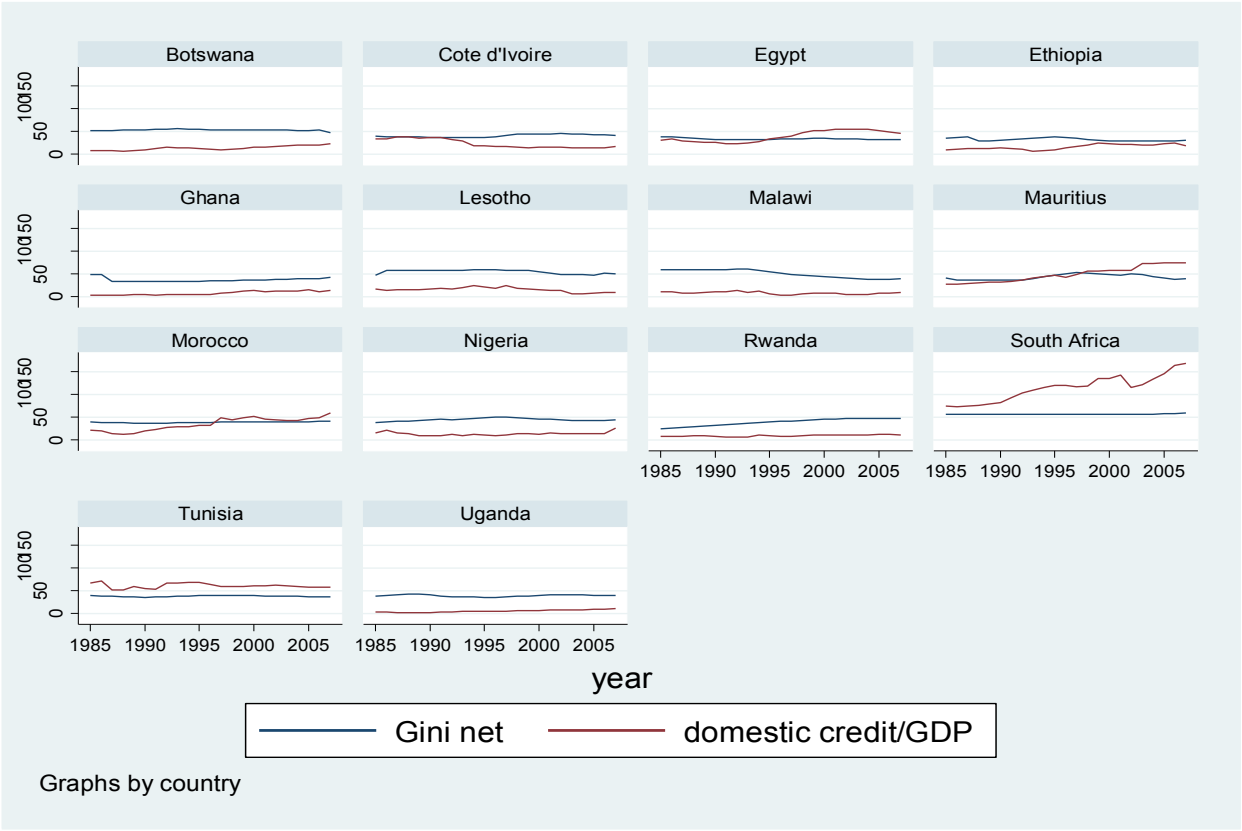


Source: World Bank, 2014b

Could the widening income inequality and persistent poverty rate despite robust economic growth rate be attributed to the state of the financial systems in Africa? In the past three decades, many SSA countries have adopted several financial sector reforms that emphasise market-oriented policies. For instance, in the 1980s and 1990s many of the countries in the region adopted structural adjustment programmes that emphasised the liberalisation and opening of the financial sectors as opposed to the government-controlled eras of the past. A look at indicators of financial development in the region reveals that although the region has experienced some progress in the financial sector, the sector remains largely underdeveloped and among the least developed in the world. The level of financial exclusion also remains very high, with only 35% of the adult population having access to the banking sector and other financial institutions (Global Findex, 2014). A cursory look at the indicators of financial development vis-à-vis the Gini coefficient, a measure of income inequality, in Figures 3.3 and 3.4 seems to suggest some correlation between income inequality and financial development. One can observe that in countries where domestic private credit as a ratio of GDP is rising, the Gini coefficient tends to fall. This can easily been seen in Egypt, Ethiopia, Malawi and Mauritius. Conversely, in countries where domestic private credit declines, there are also some indications that the Gini coefficient rises. This is evident in Côte d'Ivoire, Ghana, Lesotho and Mauritania. What is not clear, though, is the extent to which the level of financial development explains the behaviour of income inequality in these countries. Moreover, it is not obvious from the simple graphs whether the relationship between financial development

and income inequality is linear or non-linear. These can only be established using more advanced econometric techniques. Furthermore, the study performed pairwise correlation analysis for Gini coefficient and the two measures of financial development to complement Figures 3.3 and 3.4. The results reported in Table 3.1a at the end of this chapter showed that Côte d'Ivoire, Ethiopia, Nigeria and Rwanda have negative correlation of above 50% for domestic credit/GDP and 62% for bank deposits between Gini coefficients. Meanwhile, Morocco has a positive correlation of 78% between Gini coefficient and the two measures of financial development. Mauritius has on average about 50% correlation between Gini coefficient and the two measures of financial development and Malawi has a correlation of 46% for domestic credit/GDP and 91% for bank deposits/GDP between Gini coefficients. Other countries such as Egypt, South Africa and Botswana have a negative correlation of above 56% between Gini coefficients only. The correlation analysis again does not provide any strong pattern just as Figures 3.3 and 3.4. In the next section, we turn our attention to the methods that the study uses to accomplish this.

Figure 3.3: Gini net and domestic credit to GDP

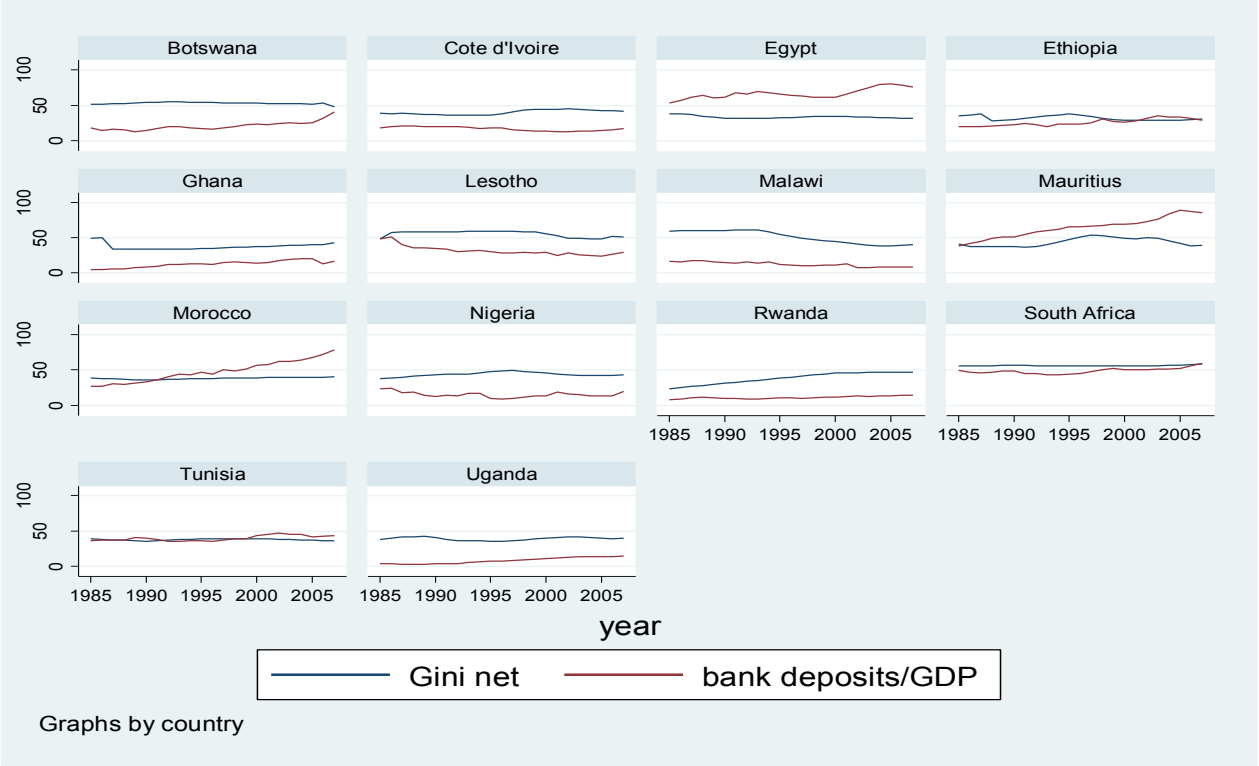


Source: SWIID Version 4.1 created by Solt, 2009

Gini net is the estimate of Gini index of inequality in equalised household disposable income post tax and post transfers, and Gini market (gross) is the estimate of Gini index of inequality in

equalised household market (pre-tax and pre-transfer) income using Luxembourg Income study data as the standard (Solt, 2014: 2).

Figure 3.4: Gini net and bank deposits/GDP



Source: SWIID Version 4.1 created by Solt, 2009

3.4 DATA DESCRIPTION

This study used more than one source for data collection. First, financial development indicators are from the World Bank global financial development (WBGFD) database. Financial development is proxied using the domestic credit to private sector (% of GDP). This ratio is widely used in the finance-growth literature (Beck et al., 2000; Beck et al., 2004). WBGFD defines this ratio as financial resources provided to the private sector by financial corporations, such as through loans, purchases of none-quality securities, and trade credits and other accounts receivable that establish a claim for payment. For some countries, these claims include credit to public enterprises. Financial corporations include monetary authorities and deposit money banks, as well as other financial corporations where data is available such as finance and leasing companies, moneylenders, insurance corporations, pension funds and foreign exchange companies. Domestic credit therefore reflects the degree to which the private sector has access to financial intermediation. A second measure of financial development used is bank deposits that represent the total value of demand, time and savings deposits at domestic money banks as a share of GDP. Deposit money banks comprise commercial banks and other financial institutions that do not accept transferable deposits

but incur liabilities such as time and savings deposits. These two measures are deflated by the end-of-year consumer price indices (Beck et al., 1999: 6).

Second, income inequality data are sourced from the Standardised World Income Inequality Dataset (SWIID) created by Solt (2009). The SWIID combines information from other income inequality datasets[10] to create a standardised income inequality dataset with greater coverage that maximises comparability of available income inequality data for the broadest possible sample of countries and years. The SWIID uses the Luxembourg Income Study (LIS) dataset to serve as the base for standardisation (Solt, 2009: 1).

However, SWIID dataset has some limitations as discussed by Jenkins (2015), Wittenberg (2015) and Ferreira et al. (2015). This includes the strong assumption of constant ratios of Gini coefficients across series within groups of country year observations and the use of the five-year smoothing algorithm that is likely to prevent abrupt changes[11]. Despite the limitations highlighted by the above authors, the SWIID has been used in empirical analysis and has been published in peer-reviewed journals by researchers such as Law et al. (2014), Solt (2009), Solt et al. (2011), Solt (2015) and Sturm and De Haan (2015). Based on the research question we are trying to answer, the SWIID is the preferred secondary source data in terms of coverage, quality and comparability. The study uses control variables such as real GDP per capita measured at current United States dollars, inflation rate, consumer prices (annual %), trade openness (% of GDP), school enrolment, primary (% gross) and value added by the manufacturing sector to GDP. These variables come from the World Bank (2014b). Clarke et al. (2006 and 2013) have used similar variables in their analysis in a group of developed and developing economies. Table 3.1b at the end of this chapter depicts summary statistics of the dependent and control variables. The mean of all the variables falls between 1 and 3 with the exception of the Squared GDP per capita and inflation. Hence, there is no strong evidence of extreme observations (outliers) in the data.

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[10] The United Nations University World Income Inequality Dataset version 2.0c, the OECD Income Distribution Database, the OECD Income Distribution Database, the Socio-Economic Database for Latin America and the Caribbean generated by CEDLAS and the World Bank, Eurostat, the World Bank's PovcalNet, the UN Economic Commission for Latin America and the Caribbean, the World Top Incomes Database and national statistical offices around the world.

[11] They also indicated that the imputation procedure introduces variability in the data that needs to be accounted for in any empirical analysis. Jenkins (2015: 39-40) in a regression analysis illustrates that ignoring the multiple imputation when analysing the data may not lead to larger standard errors provided that the sample is drawn from the same region. The SWIID has 46 African countries with varying country and year observations. Some countries have very few observations and for the purpose of this study, we focus on countries with sufficiently long periods. This reduces the sample to only 15 African countries with complete data from 1985 to 2007. The selection criteria for the countries used in this analysis is thus based on data availability.

3.5 EMPIRICAL FRAMEWORK AND ECONOMETRIC SPECIFICATION

The study employs the augmented mean group (AMG) estimator that accounts for slope heterogeneity in non-stationary macro panel time series developed by (Eberhardt and Teal, 2010) and Eberhardt (2012). The AMG estimator is feasible to analyse non-stationary panel data with heterogeneous slope even if the variables are not co-integrated.

Empirical framework of heterogeneous panel

Using the Eberhardt (2012, 62) empirical modelling: for i = 1 . . ., N and t = 1… T,

$$y_{it} = \beta_i x_{it} + u_{it} \quad \ldots(3.1)$$

where $\mu_{it} = \alpha_{1i} + \lambda_i f_t + \varepsilon_{it}$ …(3.2)

$$x_{it} = \alpha_{2i} + \lambda_i f_t + \gamma_i g_t + e_{it} \quad \ldots(3.3)$$

where x_{it} and y_{it} are observables and β_i is the country specific slope on the observable regressor, u_{it} contains the unobservables and ε_{it} is the error term. The unobservables in Equation 3.2 comprised of country fixed effects α_{1i}, which capture time-invariant heterogeneity across countries as well as an unobserved common factors f_t with country specific factor loadings λ_i, which capture time-variant heterogeneity and cross-section dependence. The factors f_t and g_t can develop in a linear and nonlinear manner over time and can be non-stationary with obvious implications for cointegration (Equation 3.3). Further problems arise because the regressors are driven by some of the same common factors as the observables. That is, the presence of f_t in Equations 3.2 and 3.3 induces endogeneity in the estimation equation where the regressors are correlated with the unobservables (u_{it}) preventing the true identification of β_i separately from λ_i (Eberhardt, 2012, 62).

Some panel heterogeneous techniques developed to handle these challenges include the Swamy (1970) random coefficient model (RCM), Pesaran and Smith (1995) mean group (MG), Pesaran (2006) common correlated effect mean group (CCEMG), and recently Eberhardt and Teal (2010) augmented mean group (AMG). The choice of AMG over others is based on the weaknesses highlighted in Eberhardt (2012, 63). Firstly, the Pesaran and Smith (1995) does not account for cross-sectional dependence. Secondly, the Pesaran (2006) solves the problem of cross-sectional dependence, time-variant unobservables with heterogeneous impact across panel members and identification by augmenting the group-specific regression equation with cross-section averages of dependent and independent variables as additional regressors. However, the estimated coefficients

on the cross-section averaged variables as well as their average estimates are not interpretable in a meaningful way in empirical application. These averages are merely included to cancel out the biasing impact of the unobservable common factor (Eberhardt, 2012: 64). Finally, although Swamy's (1970) RCM account for country-specific parameters, not much empirical discussion is available on how the issue of cross-sectional dependence is addressed.

The AMG solves the identification problem by the inclusion of a *common dynamic process* extracted from the year dummy coefficients of a pooled regression in first differences and represents the levels-equivalent mean evolution of unobserved common factors across all countries (Eberhardt and Teal, 2010: 7). Effectively, the AMG uses a two-stage regression procedure where the common dynamic process is extracted in the first stage and included in the second stage as an another regressor for all countries. See the formulation below.

AMG Stage (i): $\Delta y_{it} = b^{/}\Delta x_{it} + \sum_{t=2}^{T} c_t \Delta D_t + \varepsilon_{it} \Rightarrow \hat{c}_t \equiv \hat{\mu}_t^{\bullet}$ …(3.4)

AMG Stage (ii): $y_{it} = \alpha_i + b_i^{/} x_{it} + c_i t + d_i \hat{\mu}_t^{\bullet} + \varepsilon_{it}$ …(3.5)

$$\hat{b}_{AMG} = N^{-1} \sum_i \hat{b}_i$$

Stage (i) represents an OLS regression with T-1 year dummies in first differences from which the coefficients of the year dummies are collected and relabelled as $\hat{\mu}_t^{\bullet}$. In stage (ii) $\hat{\mu}_t^{\bullet}$ is included in each of the N standard country regressions with a linear trend to account for omitted idiosyncratic processes evolving in a linear fashion over time. Also $\hat{\mu}_t^{\bullet}$ can be subtracted from the dependent variable, meaning a common process is imposed on each country with a unit coefficient (Eberhardt and Teal, 2010: 7; Eberhardt 2012: 64).

3.5.1 Model specification

The study adopts the empirical specification of Clarke et al. (2013: 501) given as:

$$\text{LogGini net}_{it} = \alpha_i + \delta_i t + \beta_{1i}(\text{finance}_{it}) + \beta_{2i}\text{CV}_{it} + \varepsilon_{it} \quad \text{…(3.6)}$$

where α_i are country-specific fixed effects, $\delta_i t$ represents country-specific time trends, which captures any country-specific omitted variables that are either relatively stable over time or evolve smoothly over time. LogGini net represents the natural log of Gini net, the measure of income inequality. Finance is measured by two proxies: domestic credit to GDP and bank deposits to GDP, CV is a set of control variables *i* and *t* represent country and time period respectively and ε_{it} is the

error term. The focus is on finance and following the theoretical discussion in Section 3.2.1, the functional form for estimation is:

$$\text{LogGini net}_{it} = \alpha_i + \delta_i t + \beta_{1i}\text{logfin}_{it} + \beta_{2i}\text{logfin}^2_{it} + \beta_{3i}\text{logY}_{it} + \beta_{4i}\text{logY}^2_{it} + \beta_{5i}\text{logmodsec}_{it} + \beta_{6i}\text{inf}_{it} + \beta_{7i}\text{logtrade}_{it} + \beta_{8i}\text{logGS}_{it} + \varepsilon_{it} \quad \ldots(3.7)$$

Modsec, used as a proxy for the modern sector, is value added by the manufacturing sector to GDP, Y is the natural log of GDP per capita. For the *negative linear hypothesis* to hold, β_1 is expected to be negative and significant and β_2 not significantly different from zero. Secondly, for the *inverted u-shape hypothesis*, β_1 should be positive and significant while β_2 should be negative and significant. However, if the coefficient of β_1 is negative and significant and β_2 positive and significant, a *u-shape* relationship is suggested (below threshold). For the *Kuznets inverted u-shape hypothesis*, the coefficient of β_3 should be positive and significant while β_4 should be negative and significant. If β_5 is positive and significant it means inequality is likely to be higher in countries with large modern sectors and vice versa.

A set of control variables are included to account for other factors that are likely to influence income inequality. For example, inflation is included in order to capture macroeconomic instability, since a high inflation rate hurts the poor more than the rich because the rich can easily hedge their exposure with sophisticated financial instruments. In addition, if prices increase the purchasing power of the poor will be impacted more severely than that of the rich. Thus, we expect higher inflation to have a positive effect on income inequality. Trade openness captures the effect of globalisation on income inequality and government spending captures the redistributive role of the government. The exact effect of these two variables on income inequality is less clear. However, if β_7 is negative and significant, it means globalisation reduces income inequality. The choice of these variables is guided by the various theories discussed in Section 3.2 and previous studies in this area such as Clarke et al. (2006 and 2013).

3.5.2 Panel unit root tests

Two panel unit root tests for stationarity can be distinguished from the literature: the first generation test, which assumes cross-sectional independence in the panel, and the second-generation test, which allows for cross-sectional dependence in the panel (Baltagi, 2008: 275-284). We employ the first generation Im et al. (2003) and second-generation Pesaran (2007) cross-sectional augmented (CIPS) panel unit root tests to determine the order of integration of the variables. The starting point of Im et al. (2003) (henceforth IPS) is to assume that the stochastic process y_{it} is generated by the first order autoregressive process which is given as:

$$y_{it} = (1-\rho_i)\mu_i + \rho_i y_{i,t-1} + \varepsilon_{it,}\ i=1\ldots \text{N},\ t = 1\ldots \text{T}$$

where initial values y_{i0} are given, the interest will be to test the null hypothesis of unit roots $\rho_i = 1$ for all *i* then the equation can be expressed as:

$$\Delta y_{it} = \alpha_i + \beta_i y_{i,t-1} + \varepsilon_{it},$$

where $\alpha_i = (1-\rho_i)\mu_i, \beta_i = -(1-\rho_i)$ and $\Delta y_{it} = y_{it} - y_{i,t-1}$. The null hypothesis under the IPS is that each series has a unit root, $H_0 : \beta_i = 0$ for all *i* against the alternative hypothesis that some but not all of the individual series have a unit root, $H_1 : \beta_i < 0, i = 1, 2\ldots \text{N},\ \beta_i = 0,$

$i = N_1 + 1, N_1 + 2, \ldots, N.$ This alternative formulation allows the autoregressive coefficients (β_i) to vary across groups (Im et al., 2003: 56).

The study also conducted the Pesaran (2007) cross-sectional augmented (CIPS) panel unit root test. This test augments the standard ADF regression with cross-sectional averages of lagged levels and first differences of the individual series. The standard panel unit root tests are then based on the simple averages of individual cross-sectional augmented ADF (CADF) statistics. Separate cross-sectional augmented ADF (CADF) regressions are estimated for each country, which allows for different autoregressive parameters for each panel member (Pesaran, 2007: 265). The CADF model is given as:

$$\Delta y_{it} = a_i + b_i y_{i,t-1} + c_i \bar{y}_{t-1} + \sum_{j=0}^{p} d_{ij} \Delta \bar{y}_{t-j} + \sum_{j=1}^{p} \delta_{ij} \Delta y_{i,t-j} + \ell_{it} \qquad \ldots(3.8)$$

where $\bar{y}_t$ is the cross-sectional mean of $y_{it,}$ $\bar{y}_t = N^{-1} \sum_{i=1}^{N} y_{it}$. The null hypothesis is that all series are non-stationary (H_0: $b_i = 0$) for all *i* and is tested against the alternative hypothesis that at least one of the individual series in the panel is stationary (H_1: $b_i < 0$) for at least one *i*. The CIPS statistic is calculated as the averages of the individual CADF statistics as follows:

$$CIPS = N^{-1} \sum_{i=1}^{N_i} t_i \qquad \ldots(3.9)$$

where t_i is the OLS t-ratio of b_i in Equation 3.8 above

3.6 EMPIRICAL RESULTS

As a pre-testing condition, the study performed visual inspection of the entire variables to ascertain the possibility of a trend in the series. The evidence from the visual plots (not reported in the thesis) suggests a weak positive and negative trend at levels. However, once the variables are differenced,

the trend falls away. Hence, the unit root tests are conducted at levels with a constant and trend and at first difference only with a constant. Table 3.2 reports these results. The Im et al. (2003) test failed to reject the null of unit root at levels only for Gini net and inflation rate at 10% and 1% respectively, while the CADF test rejected the null of unit root at levels for all the variables but failed to reject the null of unit root at first difference. Thus, the overall evidence suggests that the variables are integrated of order I (1) except for Gini net and inflation rate in the case of Im et al. (2003). This suggests the possibility of a long-run relationship between the two measures of income inequality and financial development.

Table 3.2: Panel unit root tests

Variables	Deterministic terms	CADF test (Pesaran, 2007)	Im et al. (2003)
Levels		**Z(t-bar)**	**W-t-bar**
Log Gini net	Constant	0.49 (0.69)	-1.58 (0.06)*
Log primary school enrolment	Constant and trend	-0.46 (0.32)	1.46 (0.93)
Log domestic credit/GDP	Constant and trend	4.47 (1.00)	3.91 (1.00)
Log domestic credit/GDP Sq	Constant and trend	5.35 (1.00)	3.85 (0.99)
Log bank deposit/GDP	Constant and trend	1.69 (0.95)	-0.59 (0.27)
Log bank deposit/GDP Sq	Constant and trend	1.58 (0.94)	-0.59 (0.28)
Log government spending	Constant and trend	2.19 (0.99)	-0.97 (0.17)
Log trade	Constant and trend	3.44 (1.00)	0.43 (0.67)
Inflation	Constant	1.50 (0.93)	-4.87 (0.00)***
Log GDP per capita	Constant and trend	1.67 (0.95)	1.87 (0.97)
Log GDP per capita sq	Constant and trend	1.85 (0.97)	2.01 (0.98)
Log modern sector/GDP	Constant and trend	3.47 (1.00)	-1.02 (0.15)
First differences			
Δ Log Gini net	Constant	-4.05 (0.00)***	-2.75 (0.00)***
Δ Log primary school enrolment	Constant	-3.01 (0.00)***	-7.07 (0.00)***
Δ Log domestic credit/GDP	Constant	-6.88 (0.00)***	-8.25 (0.00)***
Δ Log domestic credit/GDP Sq	Constant	-6.88 (0.00)***	-8.17 (0.00)***
Δ Log bank deposit/GDP	Constant	-3.81 (0.00)***	-7.80 (0.00)***
Δ Log bank deposit/GDP Sq	Constant	-3.78 (0.00)***	-7.68 (0.00)***
Δ Log trade	Constant	-7.18 (0.00)***	-9.33 (0.00)***
Δ Government spending	Constant	-4.99 (0.00)***	-9.25 (0.00)***
Δ Inflation	Constant	-9.02 (0.00)***	---
Δ Log GDP per capita	Constant	-6.13 (0.00)***	-7.26 (0.00)***
Δ Log GDP per capita Sq	Constant	5.81 (0.00)***	-7.15 (0.00)***
Δ Log modern sector/GDP	Constant	-3.17 (0.00)***	-9.59 (0.00)***

***, ** and * indicate 1%, 5% and 10% levels of significance.
The null hypothesis of all three tests is that the panels contain unit roots. Δ is the first difference operator.

Lag selection in IPS is automatic using AIC and 2 lags for CADF at levels.

Source: By Authors

A second concern for macro-panel time series data (large N and T dimensions) is the problem of cross-section dependence. That is, there are inter-dependences across countries and this is likely to influence movements in macro-economic variables across countries over time. Consequently, each of the variables used in the analysis was tested for cross-sectional dependence using the Pesaran (2004) test and the results are reported in Table 3.3 below. Apart from Gini net and government spending, the rest of the variables show evidence of cross-sectional dependence, justifying the use of the AMG.

Table 3.3: Pesaran (2004) cross-sectional dependence tests

Variables	CD test	P-value
Log Gini net	-0.44	0.66
Log domestic credit to GDP	7.91	0.00
Log bank deposits to GDP	6.37	0.00
Log GDP per capita	19.39	0.00
Log government spending to GDP	-0.79	0.52
Inflation	10.45	0.00
Log primary enrolment	12.86	0.00
Log trade openness	9.47	0.00
Log modern sector to GDP	3.70	0.00

Source: By Authors

Next, the results of Equation 3.7 as specified in Section 3.5.1 are discussed. First, summary country aggregate results for the two proxies of financial development: domestic credit to GDP and bank deposits to GDP is presented. Using domestic credit to GDP, the result suggests no long-run relationship between financial development and income inequality in this group of African countries. Furthermore, the coefficient of the linear term of GDP per capita is negative and not significant and the squared term positive but significant, thus rejecting the Kuznets (1955) inverted u-shaped hypothesis. When bank deposits are used to measure financial development, the linear term is negative and not significant while the squared term is positive and significant at 10%. Thus, at the aggregate level, both proxies of financial development reject the existence of a common long-run relationship between financial development and income inequality in this group of countries. Meanwhile, the coefficient of the linear term of GDP per capita is negative and significant at 10% whereas the squared term is positive and significant at 5%. This rejects Kuznets (1955) inverted u-shaped relationship and instead supports a *u-shaped* relationship, indicating that GDP per capita growth reduces income inequality up to a certain level after which further increases in GDP per

capita will increase income inequality (Table 3.4). Both models performed relatively well as shown by the root mean square error (RMSE) of 0.010 and 0.009 for the model with domestic credit and bank deposits respectively. Diagnostic tests for the models were performed by generating the residuals and testing for cross-sectional dependence and stationarity. The Pesaran (2004) and (2007) tests confirmed that there is no evidence of cross-sectional dependence and that the residuals are stationary. See output at the bottom of Tables 3.5 and 3.6. The next paragraph discusses country-specific results.

Table 3.4: The effect of financial development on income inequality: country averages

Dependent variable	Log Gini net	Log Gini net
Log Domestic Credit to GDP	**0.004**	
	(0.02)	
Log Domestic Credit to GDP squared	**0.004**	
	(0.06)	
Log Bank Deposits to GDP		**-0.810**
		(-1.11)
Log Bank Credit to GDP squared		**0.488***
		(1.65)
Log GDP per capita	**-0.823**	**-1.572****
	(-1.27)	(-2.42)
Log GDP per squared	**0.175**	**0.306****
	(1.50)	(2.53)
Log Government Spending to GDP	0.030	0.007
	(1.36)	(0.30)
Inflation	0.0003	-0.000
	(1.35)	(-0.43)
Log trade (imports + exports/GDP)	-0.073**	-0.056
	(-2.38)	(-1.55)
Log Value added by manufacturing/GDP	0.018	0.020
	(0.62)	(0.73)
Common Dynamic Process	0.873*	0.680****
	(1.84)	(3.34)
Trend	0.002	-0.001
	(1.37)	(-0.49)
Constant	2.922***	4.295****
	(3.12)	(3.44)
Number of observations	344	322

t- statistics in parentheses; ***, ** and * indicates 1%, 5% and 10% level of significance

Source: By Authors

First, the study finds no statistically significant evidence for the *negative linear hypothesis* for all the countries studied except for weak evidence in Côte d'Ivoire only when financial development is measured using bank deposits to GDP (Table 3.6). Secondly, using domestic credit to GDP as a measure of financial development, the inverted *u-shape* hypothesis of Greenwood and Jovanovic (1990) was statistically significant at least at 5% level of significance in Botswana and Lesotho.

Meanwhile for Ghana, Côte d'Ivoire, Nigeria and South Africa, the evidence suggests a *u-shape relationship* that corroborates Tan and Law's (2012) findings from a sample of 35 developing countries. Tan and Law (2012) argue that financial development will reduce income inequality even at the early stages of financial development up to a certain threshold level, beyond which further financial development will increase income inequality. Thus, the point where further financial development increases income inequality is what Clarke et al. (2006) term the *inequality-widening hypothesis* of financial development. This hypothesis is re-enforced in countries with weak institutions where the rich can influence policy-making and restrict new firms from gaining access to finance. This effectively increases barriers and reduces the ability of the poor to improve their economic situation (Clarke et al., 2006). Thirdly, the Kuznets (1955) hypothesis is supported only in Lesotho and Uganda. This suggests that income inequality will increase in the early phase of development in these countries and decline as the countries attain higher levels of development (Table 3.5). The period under analysis coincided with episodes of banking and financial crises in Africa in the 1980s to 2000s (Section 2.2, Table 2.1), and within this period, many African countries implemented structural adjustment programmes. From the fifteen countries analysed, eight had banking crises and six financial crises and only Mauritius managed to stay safe but must have suffered from spill over effects. Hence, it is obvious that the u-shape results are capturing the deteriorating welfares of consumers during and after the crises as national governments continue with reforms in pursuit of financial sector development.

We used a second proxy for financial development to ascertain whether the finance-inequality relationship is sensitive to the choice of financial development proxy. When bank deposits are used as a measure for financial development, the Greenwood and Jovanovic (1990) hypothesis is supported in Botswana and Rwanda, while Egypt, Ghana, Morocco, South Africa, Tunisia and Uganda support the *u-shape* relationship. The *u-shape* relationship between finance and inequality continue to hold and is likely to trace the evolution of financial market policies and negative unforeseen consequences of these reforms in Africa. Furthermore, privatisation of state-owned banks probably put an end to the era of social banking and state funding models for under-privileged resource-constrained rural areas. Commercial banks shifted focus and concentrated their lending activities in the urban areas on some wealthy elites, government and big corporate firms, which led to bank concentration, limited competition, and shallow outreach of banking services especially in the rural areas.

Only Botswana and Lesotho support the Kuznets (1955) inverted *u-shape* hypothesis (Table 3.6). The credit and deposits market channels yield similar results. Botswana is the only country that displayed a robust inverted u-shape relationship using both measures of financial development. This

is likely to reflect government's effort to subsidise rural agriculture and welfare improvement in rural areas that has supported income growth in the rural areas. This supported the observed decline in poverty rate and income inequality. Finally, Botswana also experience improved financial access for the poorest 40% from 16% in 2011 to about 34% in 2014, a positive step to support share prosperity.

Finally, the study failed to find any significant statistical evidence of the finance-inequality nexus in Ethiopia, Malawi, Mauritania or Mauritius. This suggests that the link between income inequality and financial development as measured by domestic credit and bank deposits to GDP is rather weak in these countries. Although these results contradict previous evidence, they corroborate recent empirical evidence reviewed in Section 3.2.2 (Law and Tan, 2009; Kim and Lin, 2011; Law et al., 2014) and strongly reflect the outcomes of financial reforms in Africa. Honohan (2007), in a sample of 160 developed and developing countries, found that domestic credit lacks the explanatory power to explain variation in income inequality as measured by the Gini coefficient. These recent findings of no relationship between finance and income inequality has been associated with the quality of institutions and it is not surprising that the weak institutional quality in Africa may play a role in the above findings. However, this aspect was not the focus of the study, but serves as a potential area for further research.

Table 3.5: Country-specific parameters using domestic credit to GDP

Variables	Domestic credit	Domestic credit Sq	GDP per capita	GDP per capita Sq	Modern sector	Common dynamic process	Country trend
Botswana	0.509**	-0.265**	0.384	0.066	-0.138**	-0.543	0.003*
	(2.02)	(-2.13)	(1.00)	(-1.19)	(-2.01)	(-0.77)	(1.67)
Côte d'Ivoire	-3.230***	1.242***	-2.346	0.384	0.077	2.271**	0.004**
	(-4.75)	(4.95)	(-0.65)	(0.61)	(0.95)	(2.33)	(2.19)
Egypt	-0.041	0.037	-0.814	0.139	-0.070	0.220	-0.003**
	(-0.09)	(0.27)	(-1.04)	(1.13)	(-1.00)	(0.51)	(-2.70)
Ethiopia	0.282	-0.161	-0.229	0.074	-0.077	3.716**	-0.002
	(0.47)	(-0.56)	(-0.05)	(0.08)	(-0.65)	(2.26)	(-0.54)
Ghana	-0.746**	0.514***	0.838	-0.138	0.993**	1.381	0.001
	(-2.44)	(2.91)	(0.52)	(-0.47)	(2.09)	(0.83)	(0.25)
Lesotho	0.912***	-0.413***	2.107***	-0.364***	0.078	1.769***	-0.008***
	(2.90)	(-2.81)	(3.04)	(-2.74)	(0.82)	(2.66)	(-3.07)
Malawi	0.177	-0.065	-2.317	0.544	0.299***	0.094	-0.007***
	(0.46)	(-0.30)	(-0.74)	(0.80)	(3.89)	(0.15)	(-4.59)
Mauritania	-0.006	0.023	-3.479	0627	-0.033	-0.436	-0.002
	(-0.16)	(1.21)	(-1.01)	(1.02)	(-0.45)	(-0.43)	(-1.16)
Mauritius	0.846	-0.256	-6.429***	0.943***	1.501***	4.444**	0.004
	(0.36)	(-0.38)	(-2.80)	(2.79)	(4.05)	(4.07)	(0.84)
Morocco	-0.077	0.022	-1.923***	0.300***	-0.002	0.575**	0.003***
	(-0.63)	(0.51)	(-4.85)	(4.90)	(-0.02)	(1.95)	(2.81)
Nigeria	-1.002*	0.389*	0.464	-0.102	0.011	-0.392	0.003
	(-1.89)	(1.69)	(0.93)	(-1.01)	(0.08)	(-0.34)	(1.17)
Rwanda	-0.325	0.159	-2.640	0.529	0.056	2.441**	0.016***
	(-0.24)	(0.20)	(-1.33)	(1.27)	(0.63)	(2.41)	(9.84)
South Africa	-0.675*	0.164*	0.001	0.000	-0.050	-0.235**	0.001**
	(-1.93)	(1.93)	(0.00)	(0.00)	(-1.33)	(-2.54)	(2.09)
Tunisia	0.688	-0.174	-0.693	0.089	0.081	1.210***	0.003*
	(0.18)	(-0.16)	(-2.27)	(1.13)	(0.71)	(3.81)	(1.90)
Uganda	-0.224	0.169	4.883***	-1.035***	0.079	-1.590	0.004
	(-1.23)	(0.90)	(3.60)	(-3.60)	(0.67)	(-1.57)	(1.07)
No of countries	15	15	15	15	15	15	15
Total of obs	345	345	345	345	345	345	345

Diagnostic test
Pesaran xtcd test:- 0.16; P-value:0.872
PESCADF test: Z(t-bar): -7.30; P-value: 0.00
RMSE 0.010

Note: t-stats are in brackets, ***,** and* represent 1%, 5% and 10% respectively

Table 3.6: Country-specific parameters using deposits to GDP

Variables	Bank deposit	Bank deposit Sq	GDP per capita	GDP per capita Sq	Modern Sector	Common dynamic process	Country trend
Botswana	0.827***	-0.322***	0.603***	-0.086**	-0.082	0.470	-0.0004
	(3.70)	(-3.98)	(2.55)	(-2.48)	(-1.60)	(1.44)	(-0.30)
Côte d'Ivoire	-4.587*	1.680	-5.769**	1.025**	0.061	0.309	-0.002***
	(-1.83)	(1.53)	(-2.15)	(2.20)	(0.65)	(0.46)	(-2.73)
Egypt	-11.024**	3.061**	-2.300***	0.386***	0.052	0.718***	-0.003**
	(-2.56)	(2.56)	(-3.04)	(3.10)	(1.01)	(2.99)	(-2.10)
Ethiopia	-0.385	0.098	-3.315	0.750	-0.108	1.931	-0.005
	(-0.09)	(0.07)	(-0.98)	(1.00)	(-0.98)	(1.55)	(-1.20)
Ghana	-1.773***	0.880***	-1.199	0.233	0.711	1.192	0.003
	(-3.64)	(2.99)	(-0.66)	(0.67)	(1.48)	(0.92)	(0.37)
Lesotho	0.817	-0.115	3.687***	-0.677***	0.074	0.765*	-0.003
	(0.32)	(-0.13)	(3.14)	(-3.07)	(0.73)	(1.90)	(-1.26)
Malawi	0.573	-0.226	-2.499	0.576	0.287***	-0.343	-0.006***
	(0.62)	(-0.49)	(-0.70)	(0.74)	(4.04)	(-0.57)	(-3.24)
Mauritius	0.509	-0.110	-5.707*	0.828*	1.448***	3.668***	0.003
	(0.08)	(-0.07)	(-1.71)	(1.75)	(3.94)	(5.75)	(0.82)
Morocco	-0.831**	0.231**	-1.484***	0.229***	0.072	0.393***	0.005***
	(-2.56)	(2.23)	(5.07)	(4.92)	(1.42)	(4.41)	(5.40)
Nigeria	-0.250	0.042	-0.448	0.074	0.074	0.033	0.003
	(-0.44)	(0.17)	(-1.36)	(1.09)	(0.76)	(0.04)	(1.20)
Rwanda	5.446***	-2.778***	-2.293**	0.459**	-0.008	1.084***	0.017***
	(-4.85)	(-4.82)	(-2.40)	(2.31)	(-0.18)	(2.95)	(20.58)
South Africa	-2.789***	0.851***	0.035	-0.004	-0.003	-0.138***	0.0002*
	(-2.89)	(2.96)	(0.20)	(-0.18)	(--0.12)	(-3.02)	(1.71)
Tunisia	-5.625**	1.721**	-0.456	0.055	-0.019	1.182***	0.002
	(-2.18)	(2.15)	(-0.89)	(0.72)	(-0.17)	(5.31)	(1.24)
Uganda	-1.296***	0.892***	-0.992	0.198	-0.054	1.322	-0.006
	(-3.78)	(3.57)	(-0.55)	(0.52)	(-0.53)	(1.36)	(-1.28)
No of countries	14						
Total of obs	322						
Diagnostic test							
Pesaran xtcd test:-0.18; P-value:0.861							
PESCADF test: Z(t-bar): -9.37; P-value: 0.00							
RMSE:0.009							

Note: t-stats are in brackets, ***,** and* represent 1%, 5% and 10% respectively

Source: By Authors

Financial sector reforms define the functioning of the financial sector and even without modelling such effects, the outcomes of these reforms characterised by banking and financial crises in almost

all African countries signal deteriorating welfare. As demonstrated by Aziakpono (2016: 9) in his inaugural lecture on 8th September 2016 at Stellenbosch University, sub-Saharan Africa recorded the lowest performance in the 1980s and 1990s in terms of GDP growth and GDP per capita. The u-shape suggests that prior to 1980s, financial development had a negative relationship with income inequality but with the adoption of financial reforms, diseconomies kick in offsetting this relationship. The negative relationship reverses into positive with continuation of these reforms giving rise to the u-shape. A possible way forward is to ensure the financial sector serves the interest of everyone by expanding access, as is currently the policy priority for many African countries. However, necessary institutional structures to support financial consumer protection are a prerequisite to empower and educate consumers. Table 3.7 provides a summary of the current effort to increase financial inclusion with a focus on the countries covered in this chapter.

Table 3.7: Financial inclusion

Countries	2011 Account	40% poorest	60% richest	2014 Account	40% poorest	60% richest
Botswana	30.26	16.13	39.87	51.96	33.52	59.82
Côte d'Ivoire				15.14	6.41	20.96
Egypt	9.72	3.99	13.56	13.65	4.97	19.53
Ethiopia				21.79	15.93	25.70
Ghana	29.43	16.67	38.10	34.62	24.35	41.55
Lesotho	18.50	9.60	24.65			
Malawi	16.54	10.75	20.46	18.09	9.61	20.58
Mauritania	17.46	8.49	23.25	20.45	9.93	27.66
Mauritius	80.12	69.95	86.90	82.21	71.42	89.33
Morocco	39.07	27.28	47.40			
Nigeria	29.67	12.82	40.91	44.17	33.81	51.46
Rwanda	32.76	32.04	33.25	38.14	14.65	54.85
South Africa	53.65	38.79	63.64	68.76	56.47	77.32
Tunisia				27.43	17.20	33.91
Uganda	20.46	10.91	27.07	27.78	13.52	37.39

Source: Global Findex, 2014

Table 3.7 illustrates account penetration between 2011 and 2014 from the Global Findex dataset. Each year has three columns: overall account penetration, the proportion of overall account penetration held by the 40% poorest and 60% richest of the total population aged 15 and above respectively.

Apart from Mauritius, South Africa and Botswana, which had above 50% financial inclusion by 2014, other countries have less than 50% account penetration. The 40% poorest, who constitute a significant share of the total population, are largely excluded and this reduces the potential market size and obscures the link between finance and inequality. However, some countries are making significant efforts to increase financial access for the 40% poorest segment of the population. This is a positive step to foster shared prosperity, increase income shares of the poor, and hence encourage inclusive growth. Dabla-Norris et al. (2015) showed that a one-percentage point increase in the income shares of the 20% bottom poor has a greater impact on GDP growth than the same increase in the income shares of the top 20% richest. This is evidence of welfare enhancement at the bottom of the pyramid and serves as a suitable pointer for tailor-made financial services for the poor, the underserved and rural dwellers. For the poor, financial inclusion provides a convenient and reliable means to save for education of their children, plan for retirement and accumulate assets to insure against risk. Poor talented and underserved small micro-entrepreneurs can borrow to finance their investment projects rather than depending on their meagre savings. Rural farmers can borrow to buy inputs for the farming season such as seeds, pesticides or fertilisers and this will increase rural agricultural outputs.

Overall, successful financial inclusion strategies have the potential to connect the informal rural area to the formal sector and this ensures shared prosperity that is associated with a reduction in poverty and income inequality. Development and growth strategies in Africa need to recognise and account for the informality of African economies. Hence, connecting the informal to the formal sector through financial services and other basic services will certainly be an optimal strategy to enhance welfare and support share prosperity. This will entail well-coordinated efforts from both the private and the public sector. The public sector will need to build the necessary institutions to support financial inclusion initiatives and ensure financial inclusion does not compromise consumer welfare and hence affect financial stability negatively.

3.7 CONCLUSION

This study has examined the relationship between financial development and income inequality in a balanced panel of 15 African countries from 1985-2007. We examine whether financial development in Africa has an effect on income inequality and whether this effect depends on the level of financial development or economic development. The analysis used SWIID version 4.1 created by Solt (2009) while acknowledging the limitations of the dataset discussed earlier. We failed to find evidence of a statistically significant negative linear relationship between finance and income inequality for the African countries studied except for weak evidence in Côte d'Ivoire. The Greenwood and Jovanovic (1990) inverted *u-shape hypothesis* was supported in Botswana, Lesotho

and Rwanda but this relationship varied depending on the measure of financial development. The *u-shape* relationship between finance and income inequality was supported in Egypt, Côte d'Ivoire, Ghana, Morocco, Nigeria, South Africa, Tunisia and Uganda but the results were not statistically significant across the two measures of financial development. These results are likely to capture the deteriorating state of welfare in the 1980s to late 1990s characterised by banking and financial crises that reversed some of the welfare gains in the pre-1980s. None of the credit and deposit channels showed any discernible evidence of reducing income inequality. The Kuznets (1955) *inverted u-shape* relationship between GDP per capita and income inequality was supported in Botswana and Lesotho using both measures of financial development and in Uganda using only domestic credit. Finally, there is no statistically significant evidence for the finance-inequality nexus in Ethiopia, Malawi, Mauritania and Mauritius.

Overall, the results echoed the limitations of imposing the homogeneity assumption in long-run analysis and emphasised the importance of country-specific analysis in panel studies. One does not need to think out of the box to realise that the previous negative long-run relationship between financial development and income inequality in Africa, particularly from 1980 to 2004, is highly unstable. It would have been difficult for financial development to reduce income inequality during this period when almost all African countries were experiencing banking and financial crises which are often associated with loss of output and increased unemployment resulting in deterioration in the quality of life (see Laeven and Valencia, 2013).

The study recommends the following policies based on the finding. First, the u-shape relationship observed signals the existence of financial market imperfections. Regulators should redirect attention to reduce market imperfections and increase competition within the financial sector. That is, African governments should increase investment in physical and financial infrastructure development such as credit bureaus, credit registry and credit rating and improve the payment system. This will reduce information asymmetry in the credit market and assist banks to price risk appropriately. Secondly, given the rural nature of most African countries and their heavy reliance on rural agriculture for subsistence livelihoods, there is a need for a well-thought-through public private partnership to deliver financial services in the rural areas in order to support rural agricultural productivity and boost rural income. Innovation in the delivery of financial services to the poor and rural dwellers is essential in order to reduce costs and increase outreach, as Chapter 2 identified cost and distance as major barriers to financial inclusion. However, financial outreach policies should focus on the quality and suitability of financial products to ensure usage and avoid dormant accounts

This chapter investigated the long-run relationship between the depth dimension of the financial system and welfare as measured by Gini coefficient across a selected number of African countries. This revealed the dynamic relationship between the credit and deposits channels of the financial system and income inequality in Africa. Chapter 4 examines the second aspect of the financial system: outreach of financial services and its association with welfare. It expands the number of welfare indicators to include the poverty headcount as measured by less than US$1.25 day, the under-five mortality rate per 1,000 live births and the HDI.

Table 3.1a: Pairwise correlation coefficient between Gini net and financial development

Botswana			
	Log Gini net	log domestic credit/GDP	log bank deposits/GDP
Log Gini net	1		
log domestic credit/GDP	-0.28(.19)	1	
log bank deposits/GDP	-0.56(0.01)	0.90(0.00)	1
Cote d'Ivoire			
	Log Gini net	log domestic credit/GDP	log bank deposits/GDP
Log Gini net	1		
log domestic credit/GDP	-0.74(0.00)	1	
log bank deposits/GDP	-0.90(0.00)	0.88(0.00)	1
Egypt			
	Log Gini net	log domestic credit/GDP	log bank deposits/GDP
Log Gini net	1		
log domestic credit/GDP	0.07(0.76)	1	
log bank deposits/GDP	-0.69(0.00)	0.40(0.06)	1
Ethiopia			
	Log Gini net	log domestic credit/GDP	log bank deposits/GDP
Log Gini net	1		
log domestic credit/GDP	-0.71(0.00)	1	
log bank deposits/GDP	-0.62(0.00)	0.81(0.00)	1
Ghana			
	Log Gini net	log domestic credit/GDP	log bank deposits/GDP
Log Gini net	1		
log domestic credit/GDP	0.16(0.46)	1	
log bank deposits/GDP	-0.11(0.62)	0.87(0.00)	1
Lesotho			
	Log Gini net	log domestic credit/GDP	log bank deposits/GDP
Log Gini net	1		
log domestic credit/GDP	0.79(0.00)	1	
log bank deposits/GDP	0.29(0.17)	0.36(.09)	1
Malawi			
	Log Gini net	log domestic credit/GDP	log bank deposits/GDP

Table 3.1a: Pairwise correlation coefficient between Gini net and financial development

Log Gini net	1		
log domestic credit/GDP	0.46(0.03)	1	
log bank deposits/GDP	0.91(0.00)	0.56(.01)	1
Mauritania			
	Log Gini net	log domestic credit/GDP	log bank deposits/GDP
Log Gini net	1		
log domestic credit/GDP	0.63(0.00)	1	
log bank deposits/GDP	.	.	1
Mauritius			
	Log Gini net	log domestic credit/GDP	log bank deposits/GDP
Log Gini net	1		
log domestic credit/GDP	0.52(0.01)	1	
log bank deposits/GDP	0.46(0.03)	0.97(0.00)	1
Morocco			
	Log Gini net	log domestic credit/GDP	log bank deposits/GDP
Log Gini net	1		
log domestic credit/GDP	0.79(0.00)	1	
log bank deposits/GDP	0.78(0.00)	0.92(0.00)	1
Nigeria			
	Log Gini net	log domestic credit/GDP	log bank deposits/GDP
Log Gini net	1		
Log domestic credit/GDP	-0.50(0.02)	1	
Log bank deposits/GDP	-0.79(0.00)	0.65(0.00)	1
Rwanda			
	Log Gini net	log domestic credit/GDP	log bank deposits/GDP
Log Gini net	1		
Log domestic credit/GDP	-0.57(0.01)	1	
log bank deposits/GDP	-0.78(0.00)	0.79(0.00)	1
South Africa			
	Log Gini net	log domestic credit/GDP	log bank deposits/GDP
Log Gini net	1		
log domestic credit/GDP	0.38(0.08)	1	
log bank deposits/GDP	-0.79(0.00)	0.57(.005)	1
Tunisia			
	Log Gini net	log domestic credit/GDP	log bank deposits/GDP
Log Gini net	1		
log domestic credit/GDP	0.52(0.01)	1	
log bank deposits/GDP	-0.20(0.37)	-0.29(0.18)	1
Uganda			
	Log Gini net	log domestic credit/GDP	log bank deposits/GDP
Log Gini net	1		

Table 3.1a: Pairwise correlation coefficient between Gini net and financial development

log domestic credit/GDP	-0.13(0.56)	1	
log bank deposits/GDP	-0.00(0.99)	0.96(0.00)	1

P-values are in parenthesis

Table 3.1b: Summary statistics of dependent and control variables

	(1)	(2)	(3)	(4)	(5)
VARIABLES	N	Mean	SD	Min	Max
Log Gini net	322	1.623	0.088	1.375	1.784
Log domestic credit/GDP	322	1.270	0.413	0.082	2.224
Log domestic credit/GDP squared	322	1.784	1.091	0.007	4.947
Log bank deposits/GDP	322	1.371	0.323	0.416	1.947
Log bank deposits/GDP squared	322	1.984	0.864	0.173	3.793
Log GDP per capita	322	2.854	0.477	2.050	3.798
Log GDP per capita squared	322	8.371	2.778	4.203	14.43
Log Government spending/GDP	322	1.168	0.171	0.684	1.585
Inflation	322	13.60	21.86	-9.809	215.4
Log modern sector/GDP	322	1.073	0.242	0.402	1.403
Log trade/GDP	322	1.783	0.240	1.031	2.322

CHAPTER 4
THE RELATIONSHIP BETWEEN FINANCIAL INCLUSION AND WELFARE IN SUB-SAHARAN AFRICA: EVIDENCE FROM DISAGGREGATED DATA[12]

4.1 INTRODUCTION

One important role of financial inclusion[13] is its potential to support inclusive economic growth by encouraging everyone to participate in economic activities through saving and running micro-enterprises. As such, international bodies such as the World Bank, the G20[14] and more than 50 national governments in developing and emerging economies have committed to increase financial access to the world's 2.5 billion unbanked adults (AFI, 2013: 1). This move is supported by emerging empirical evidence linking financial inclusion to poverty reduction – allowing households to save for retirement and reduce the risk of dealing in cash only and the development of entrepreneurship (Burgess and Pande, 2005; AFI, 2013; Cull et al., 2014).

However, despite this renewed interest to provide financial access to everyone who can use it, between 2011 and 2014 as analysed in Chapter 2, the level of financial inclusion in sub-Saharan Africa (SSA) and across countries/regions is low. For example, account ownership in SSA increased from 24% in 2011 to 34% in 2014, but access to credit increased only slightly from 4.8% to 6% over the same period (Global Findex, 2014). This reflects financial underdevelopment and the existence of market imperfections such as limited competition, information asymmetry and other institutional factors such as interest rate caps that still exist in many SSA countries (Sexagaard, 2006; Maimbo and Gallegos, 2014).

On the other hand, there has been a shortage of empirical studies on the effect of financial inclusion on welfare, partially because of data limitation on access and use of financial services by individuals or households. Although some studies are available in SSA on this topic, they focused on the effect of microfinance on households' welfare such as household income, business income, asset accumulation, health, education, food security and nutrition, child labour, job creation, women empowerment and housing. See van Rooyen et al. (2012) for a systematic review. Furthermore, at the country level, scholars such as Copestake (2002), Kai and Hamori (2009) and Tchouassi (2011) have examined the effect of microfinance on income inequality in Africa. However, evidence from

[12] The paper based on this chapter has been accepted for publication in the *African Review of Economics and Finance*.
[13] Financial inclusion or financial access here refers to making financial services accessible, available and affordable to everyone, with a particular focus on the poor, underserved and small and medium size enterprises (SMEs).
[14] G20 is "the group of twenty", an international forum for governments and central bank governors from 19 individual countries and the European Union.

such studies is likely to be incomplete as microfinance offers only selective financial access as opposed to access for everyone. From the developed countries, evidence has shown that financial access improves welfare of the poor (Aportela, 1999; Burgess and Pande, 2005; Honohan, 2007; Beck et al., 2007b). Nevertheless, such evidence is lacking in SSA.

The purpose of Chapter 4 is to take advantage of a data set that is comparable across countries – the global financial inclusion dataset (Global Findex) 2011 and examine the association between financial inclusion and welfare in a cross-section of 37 SSA countries. The Global Findex is the first-ever household survey dataset that contains information on both the demand and supply sides at individual level on access and use of financial services across countries. The dataset provides a new set of indicators collected by surveying about 150,000 adults in 148 economies, focusing on how they borrow, manage risk, save and make payments. The data can be disaggregated into geographical regions and individual characteristics, facilitating analysis and comparability across countries (Demirgüç-Kunt and Klapper, 2013: 282 and 286). Studies based on this dataset (Demirgüç-Kunt and Klapper, 2012a, 2012b; Allen et al., 2014) have mainly provided a general overview of financial inclusion across countries. Hence, the questions of interest are: what is the relationship between financial inclusion and welfare? Which aspects of financial inclusion are instrumental in affecting welfare either negative or positive? By providing empirical answers to these questions, this chapter fills an important gap in the financial inclusion and welfare space in SSA.

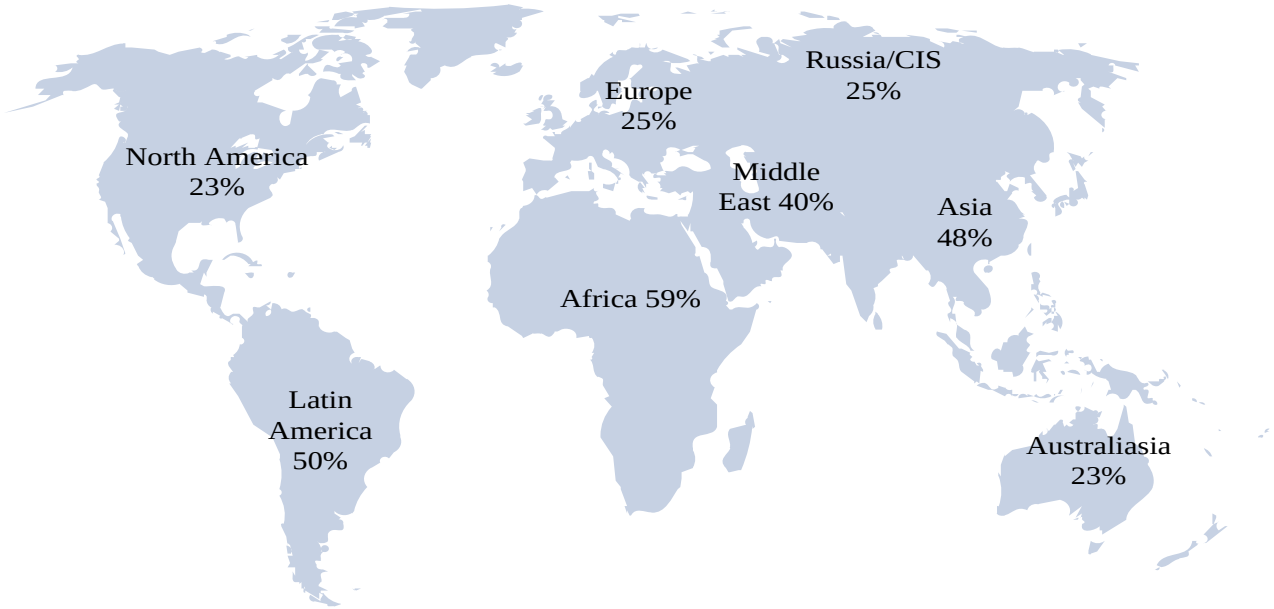
The reminder of the chapter is structured as follows: Section 4.2 presents some stylised facts about SSA. Section 4.3 discusses the theoretical and empirical literature. Section 4.4 discusses the methodology and data sources. Section 4.5 reports and discusses results and Section 4.6 draws conclusions, makes recommendations and suggests areas for further research.

4.2 STYLISED FACTS ABOUT SSA

Chuhan-Pole et al. (2014) predict that the economic growth rate for SSA in 2015-2016 will be about 5.2%, up from 4.6% in 2014, and that it will rise further to 5.3% by 2017. However, the main concern is how to ensure that such a prospective growth is inclusive as past experience has shown that economic growth seems to have historically benefited only a few elites as evidenced by the high proportion of people in SSA (46.85% as of 2011) surviving on US$1.25 or less a day (PovcalNet, 2014). The resultant wealth concentration in the hands of a few individuals in the region has resulted in a millionaire growth boom. For example, it is projected that after ten years, the increase in percentage of millionaires in Africa including SSA will reach 59% – higher than any other region in the world (Frank, 2015). This continued increase in wealth concentration is probably

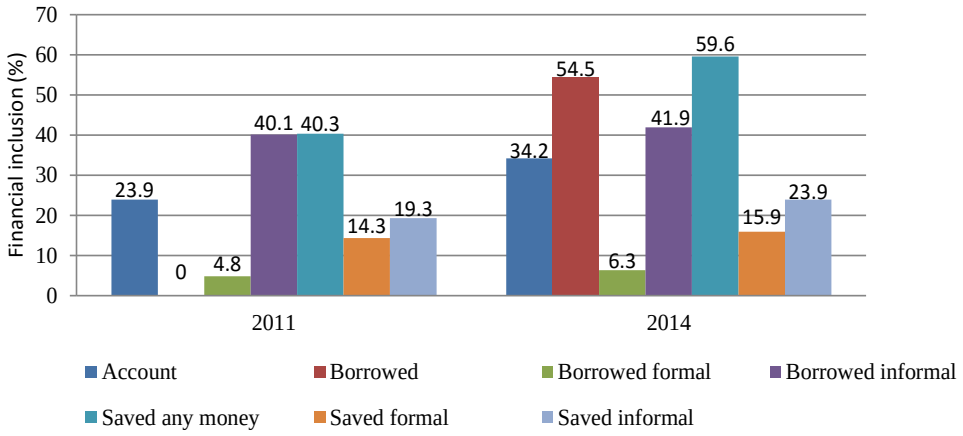
the reason why income inequality keeps rising despite robust growth over two decades (see Figure 4.1).

Figure 4.1: 10 years predicted regional growth in millionaires



Source: By Authors using data from Frank, 2015:19

Figure 4.2: Access and use of formal financial services in SSA

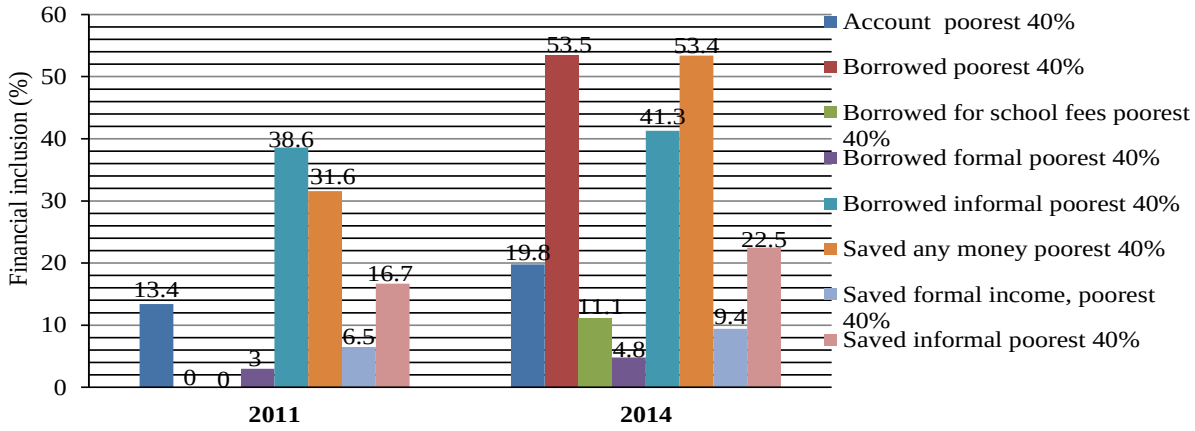


Source: By authors using Global Findex 2014

The information presented in Figure 4.2 reveals that about 40.3% and 60% of adults 15 years and older in sub-Saharan Africa had saved some money in the past 12 months in 2011 and 2014 respectively. However, only 14.3% and 16% indicated saving at formal institutions. Furthermore, about 55% of adults 15 years and older had initiated a loan in the past 12 months in 2014 and only 6.3% managed to secure a formal loan. Unfortunately, this question was not asked in the 2011

survey. Apparently, individuals who cannot save and borrow formally tend to the informal sector as is evident by the growth in informal savings and borrowings illustrated in Figure 4.2.

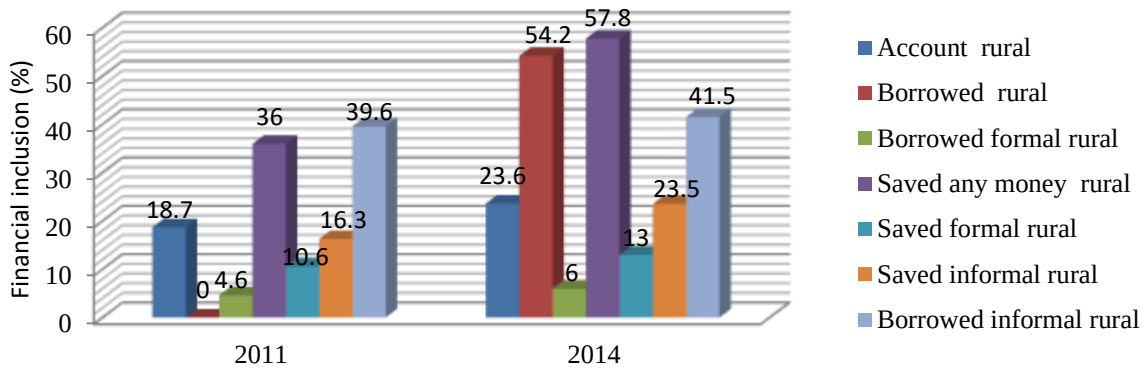
Figure 4.3: The 40% poorest access and use of formal financial services in SSA



Source: By authors using Global Findex 2014

Accordingly, SSA has a huge unmet demand for financial services, which therefore suggest high potential for financial sector expansion, as illustrated by Figures 4.2, 4.3 and 4.4. Overall, account penetration has increased from 24% in 2011 to 34.2% in 2014, although there is a huge unmet demand for loans and saving facilities both by the poorest 40% of the population and in the rural areas. The poorest 40% of the population and rural dwellers, who are often excluded from the formal financial system, show strong demand for borrowing and saving facilities (see Figures 4.3 and 4.4). This suggests unexplored opportunities presented by the poorest and informal sector that can be harnessed to promote inclusive economic growth.

Figure 4.4: Formal versus informal use of financial services in SSA



Source: By authors using Global Findex 2014

The growth potential of the informal sector has largely remained unrealised due to the sector's limited access to economic resources. As such, the current growth model in SSA, which focuses on the formal sector and is driven mainly by mining, oil and gas, is not sufficiently broad-based as it employs very few people. The Chuhan-Pole et al. (2014) report pointed out that such a narrow focus has serious implications for poverty reduction and that growth in the agricultural and services sectors in SSA has led to more poverty reduction than growth in industry. Thus, the integration of the informal sector, with a particular focus on increasing rural agricultural productivity to boost rural income, will play a critical role in reducing poverty and income inequality. Such a structural transformation requires more investment in rural public goods and services such as education, health care, rural roads and electrification. The financial sector can drive this process of inclusive growth by providing financial access to all who can use it and have a need for it, in particular the poorest 40% and rural SMEs.

4.3 LITERATURE REVIEW

4.3.1 Conceptual framework

There is no universally accepted definition of financial inclusion since the term is multidimensional by nature and varies depending on the specific agenda of countries. Generally, however, financial inclusion covers all initiatives directed towards making formal financial services available, accessible and affordable to everyone in a given society with a particular focus on those previously excluded from the formal financial sector (AfDB, 2013: 25). This includes activities of participants in the formal and semi-formal sectors such as commercial banks, development finance institutions, post offices, microfinance banks, credit unions and cooperatives. The concept of financial inclusion therefore stretches beyond improving access to credit to include facilitating access to savings, enhancing risk management and ensuring the development of an efficient financial infrastructure that allows individuals and firms to participate fully in the economy while protecting consumer rights (AfDB, 2013: 25)[15].

It is worth noting that access to financial services and the actual use thereof are two distinct concepts. Voluntary financial exclusion may occur because of indirect usage through a family member or lack of demand for financial services, or some individuals may have the need for financial services but face serious physical barriers to access. Such involuntary exclusion is a problem and can be associated with one of the following reasons: (i) remoteness of the places where households live, (ii) unfavourable conditions attached to financial products, (iii) the prices of the

[15] See World Bank (2008); AFI (2010); ACCION (2009) and Gardeva and Rhyne (2011) for other definitions.

products offered are not affordable, (iv) lack of knowledge of available financial products due to a lack of marketing, and (v) self-exclusion for fear of rejection (Kempson and Whyley 1999: 2).

4.3.2 The theoretical linkages between financial inclusion and welfare

One of the biggest challenges of financial inclusion studies is that the theoretical linkages with welfare are still at the early stages of development. According to Ellis et al. (2010: 4) several mechanisms exist that connect financial access to growth, which in turn leads to welfare improvement, and this varies depending on the types of financial access concerned. Typically, this can occur through formal account ownership, saving or deposits, credit, insurance and the payment system.

Firstly, ownership of a formal bank account can increase asset accumulation and serve as a means of greater economic empowerment, particularly among women. Thus, a formal account serves as the entry point into the formal financial system. It provides an opportunity for households to accumulate lump sums to invest in income-generating activities such micro-enterprises, purchase-farming inputs such as tractors and fertilisers, plan for their retirement, invest in the education of their children, and manage day-to-day risk. Hence, a basic account serves as a store-of-value, for precautionary purposes and a safe place to store money outside the home to avoid temptation spending and lending to friends and family members (Radcliffe and Voorhies, 2012: 5).

Secondly, access to health insurance will improve the welfare of the poor, particularly as they have limited financial resources to afford out-of-pocket expenditure for health care services. In the absence of access to health insurance, the poor will have to pay medical bills from their own pockets. This increased cost of health services may push the poor to resort to informal sources of health services such as drug stores or to rely on self-medication with potential adverse consequences. Thus, a financial system that provides tailor-made services such as micro-insurance schemes will improve access to health care services for the poor, thereby improving health-related outcomes. The reduction in out-of-pocket expenditure will reduce asset loss, increase savings and induce higher demand and use of health care services. Finally, participation in personal health insurance schemes may also alert beneficiaries about preventive care and encourage them to go for regular check-ups (Pham and Pham, 2012).

Thirdly, the theoretical links through which electronic payments can influence welfare centre around improved efficiency, cost reduction and minimisation of leakages and connectivity. In the absence of an electronic payment system, individuals and employers have to queue in a bank to collect salaries or collect money to pay workers. The introduction of an electronic payment system reduces the transaction cost of carrying cash around and time spent in queues in banks, and creates a

reliable connection between government, employers, employees and families for direct payment of social grants, wages, and remittances to friends and families abroad. More importantly, an electronic payment system can create a platform for other institutions to provide additional services to rural households as well as creating new business opportunities (Ehrbeck et al., 2010).

Finally, the exact effect of improved access to credit on welfare is not clear-cut, particularly with regard to income inequality. According to the World Bank (2008), improved access to credit is likely to increase income inequality in the short run but the magnitude of the effect will depend on the number of people with access to credit. If a large number of people gain financial access, the effect on income inequality would be spread over a larger population and its effect may start to materialise almost immediately. Wider access to financial services entails increased competition within financial intermediaries, which in turn is likely to reduce intermediation costs and improve access to credit for potential entrepreneurs. This will lead to increased productivity over time as the new entrants use their new fortunes to create jobs through the expansion of their businesses and inequality will decline in the long run (Klapper et al., 2006). Giné and Townsend (2004) in the case of Thailand used general equilibrium models with micro data to confirm that the greatest quantitative effect of financial access on the welfare of the poor comes through this indirect labour market channel. However, depending on the distribution of entrepreneurial ability, wealth and the productivity of labour and capital, income inequality will fall in the long run. Since the desired effect on welfare can only be observed over the long run, financial inclusion may increase income inequality in the short run, particularly when the financial sector is highly exclusive.

This theoretical exposition suggests that in the absence of financial market imperfections, individuals with the greatest entrepreneurial ability will gain access to credit to finance their projects, implying that entrepreneurial activity will be a function of ability and not parental wealth. As such, the return on investment for entrepreneurship will be a function of ability and not of dynastic assets and connection. Hence, in an efficient and competitive financial market environment, the resources of the society will flow to talented and innovative individuals and not to those with the most assets historically (Demirgüç-Kunt and Levine, 2009). This breaks down into a situation where individual's talent and ability determine their occupational choices to become either wage earners or entrepreneurs (Banerjee and Newman, 1993). The above analogy suggests that the effect of financial inclusion on some dimensions of welfare such as income inequality may be positive in the short run.

4.3.3 Empirical literature

While early evidence (Beck et al., 2007a) suggests that financial inclusion reduces poverty and income inequality, such evidence is still in its infancy. A very limited number of empirical studies

have examined the effect of financial inclusion on income inequality. In the interest of readability, the literature review is divided into two sections: African studies, and studies outside Africa. Furthermore, since there are limited empirical studies on the effects of financial access on income inequality, the literature review will also include some relevant country-specific studies that examine the effect of financial access on household income.

At the time of writing, just three empirical studies have examined the effect of microfinance on income inequality in Africa (Copestake, 20021; Kai and Hamori, 2009; Tchouassi, 2011). The conventional belief from the donor community is that by improving access to finance for the poor, microfinance reduces market distortion, which in turn reduces income inequality. However, because of the quest to achieve financial sustainability, microfinance can both reduce and increase income inequality. Copestake (2002), following this line of argument, developed a group base lending model to examine the divergent effects of the Christian Enterprise Trust of Zambia microcredit scheme operated on the Zambian Copperbelt on income distribution. The author regressed the real household income per adult equivalent against the value of the loan before multiplying the answer by a dummy set of one for households below the poverty line, and zero for those above the poverty line. The results suggest that access to loans exerts a significantly greater impact on those below the poverty line than on those above it. Moreover, the overall evidence reveals that the effect of microcredit varies depending on who gets a loan, who graduates to a bigger loan, and who drops from the programme, as well as the dynamism of the group. This implies that microfinance has a polarising effect on income inequality.

Tchouassi (2011) also examined the effect of microfinance on income inequality and vulnerability in eleven central African countries. The author used the degree of microfinance intensity to capture the effect of microfinance on inequality and employed OLS and random effect. The results show that a dense network of microfinance reduces income inequality. This finding corroborates the results of Kai and Hamori (2009), who employed the same methodology for 61 developing countries, including African countries, to examine the effect of microfinance on income inequality. These two studies suggest that a denser network of microfinance institutions reduces income inequality.

The lack of access to financial services such as a basic bank account experienced by the rural poor has been identified as a major limitation to accumulating assets, smoothing consumption and investing in the education of their children. This has resulted in an ever-growing income inequality between the rich and the poor. Allen et al. (2012) used household surveys and bank penetration data at district level in 2006 and 2009 to explore the effect of Equity Bank's branch expansion in rural Kenya. Using OLS, ordered probit model and GMM to control for endogeneity: their results show

that Equity Bank's branch expansion into underserved rural districts had the greatest effect on low-income households with no salaried job, those who had lower than secondary education, and those who were homeless. The study further found that the penetration of Equity Bank into rural areas increased the chances of having a bank account and securing a loan by four and one percentage points respectively. Dupas and Robinson (2013) also found that the use of a commitment saving account increased the average daily investment for market women in the treatment group by 38% to 56% after four to six months compared to market women without the commitment saving account. Evidence further showed that the electronic platform created by the mobile phone based money transfer (M-Pesa) has an indirect effect on income inequality. This is transmitted through domestic and international remittances, job creation, risk sharing and management as well as subsidiary businesses that have developed to use the platform (Aker and Mbiti, 2010; Mbiti and Weil, 2011; Ondiege, 2013; Buku and Meredith, 2013; Jack and Suri, 2014).

The Mzansi account implemented in South Africa's commercial banks to correct the injustice of the previous government is another suitable example of promoting access to financial services. Using the financial diaries dataset, Bankable Frontier Associates (2010) constructed a set of indictors to describe changes in saving behaviour and usage, accumulation within a month as a ratio of monthly income, and monthly balances as a ratio of total financial assets, and measured changes to these indicators for other instruments such as retirement annuities and informal instruments. Their results revealed an overall increase in income across the financial diary sample from 2004 to 2009 when the effect of inflation was taken into account. The median per capita income of households in the sample increased by 2.4% on average adjusted for inflation but this increase varied across sample sites. Evidence suggests this increase in per capita income raised the overall monthly saving rate in the sample from 20% of income in 2004 to 23% of income in 2009, while the frequency of bank use increased on average from 2.9 to 5 transactions per month. In terms of bank balances, per capita income increased from 33% to 48% of financial assets in 2004 and 2009 respectively, whereas saving 'under the mattresses declined slightly from 19.3% to 17% of financial assets over the same period. However, the evidence is not strong enough to attribute the entire increase in formal financial use to the Mzansi account offering only. Also in the South African context, Karlan and Zinman (2007) confirmed that access to consumer credit for households whose applications had previously been rejected significantly improved welfare. Households in the treatment group were more likely to retain their jobs, increase income, and improve food consumption quality and quantity than the control group.

Country-specific studies outside Africa have produced similar results, particularly on the extension of financial services and physical access such as rural bank branch expansion into rural areas. For

instance, the Mexican Saving Institute and Banco Aztco of Mexico's expansion into rural areas in the late 1990s and early 2000s increased average savings of low-income earners by 3% to 5% and informal business growth by 7% (Aportela, 1999; Bruhn and Love, 2013). Burgess and Pande (2005) found similar results in India using evidence from the Indian social banking experiment. They employed regression analysis using two dependent variables: headcount poverty and rural agricultural wages. Their results showed a drop in poverty headcount ratio by 4.10 percentage points for every additional bank branch opened in a rural area. The evidence suggests that easy access to loans encourages long-term investments, which in turn increases wages for rural agricultural labourers.

In a cross-country study, Honohan (2007) examined variation in households' access to financial services by constructing new access indicators using information from commercial banks and microfinance institutions. The new access indicator was then tested to examine its effect on income inequality. The results from OLS estimation suggest that the access indicator is strongly correlated with income inequality as measured by the Gini coefficient, suggesting that countries with better financial access have lower income inequality. Similarly, Beck et al. (2007b) and Bae et al. (2012) found that liberalising the intrastate bank branching restriction in the United States reduced income inequality. More specifically, bank branch deregulation reduced income inequality by improving the incomes of lower income workers because deregulation increased bank efficiency, which in turn enhanced the per capita income growth rate of each state. Similarly, Mookerjee and Kalipioni (2010) found in a cross-country study that a higher number of bank branches per 100,000 adults reduced income inequality.

Park and Mercado (2015) and García-Herrero and Turégano (2015) examined whether financial inclusion contributes to reducing income inequality. The former constructed a financial inclusion index, which they used to examine the relationship between poverty and income inequality in developing Asia. Their results show that financial inclusion reduces poverty and lowers income inequality. Meanwhile, the latter measured financial inclusion from various dimensions such as adults with bank accounts and credit to SMEs as percentage of GDP using Honohan's (2007) access indicator and Sarma's (2012) financial inclusion index. After controlling for a host of other factors, their results also revealed that financial inclusion reduced income inequality, whereas after controlling for the effect of fiscal policy and economic development, private sector credit to GDP did not.

However, Randomised Control Trials (RCT) seem not to support these positive effects of access to finance on welfare. For example, there are allegations of increased suicide attempts in India linked to over-indebtedness of microfinance participants (Duflo et al., 2013). Specifically, empirical

updates of the Spandana study in Hyderabad, India, show no improvement in the welfare of participants. Fifteen to eighteen months after gaining access, households are less likely to be entrepreneurs but they invest more in existing businesses. Moreover, average profit increased only for businesses that had existed before the launch of the microcredit programme, and the increases generally concentrated on bigger businesses (Duflo et al., 2013). This suggests widening income inequality.

From the foregoing review, one can draw the following conclusions: first, there is no empirical cross-country evidence at the macro level in the African context on the relationship between financial inclusion and income inequality, although a few micro-level studies exist. Second, available country-specific and cross-country studies on access consistently show that greater access to financial services, such as saving and bank branch extension into rural areas, reduces income inequality. However, RCT studies focusing on microfinance challenged these results. Thus, there is a considerable gap at the macro level on the relationship between financial inclusion and income inequality in SSA, and this accordingly deserves attention giving the rising level of income inequality in the face of the robust economic growth rate achieved by the region in the last two decades.

4.4 METHODOLOGY

4.4.1 Model specification

As mentioned in Section 4.1, the study is based on a cross-section of 37 SSA countries from the Global Findex (2011) dataset. The study adopts the empirical model of Clarke et al. (2006: 584) with some modification, specified as:

$$Y_i = \alpha + \beta_1 FI_i + \beta_2 controls_i + \varepsilon_i \quad \ldots(4.1)$$

where Y represents proxies of welfare used in the study such as income inequality, poverty headcount measured as less than US$1.25 a day, under five mortality rate per 1,000 live births and HDI. FI represents financial inclusion as measured by account ownership, account use for business, electronic payment, loans from formal financial institutions, formal loans to pay school fees, health insurance and formal savings, disaggregated according to gender and locality (rural and urban). β_1 are the coefficients of financial inclusion, β_2 represents the coefficients of the control variables and ε_i is the white noise error term. We expect the coefficient of β_1 to be negative, suggesting that greater financial inclusion improves welfare. However, the coefficient of β_1 can also be positive, particularly in SSA where evidence of excess liquidity has been documented (Saxegaard, 2006; Asongu, 2014). This is reinforced by the existence of institutional factors such as interest rate caps (Maimbo and Gallegos, 2014). Interest rate caps provide incentives for banks to hold excess

liquidity because lending may not be profitable enough to cover the costs and concomitant risk. The control variables used include the inflation rate, to condition for the effect of the macroeconomic environment since high inflation hurts the poor more than the rich as the latter can hedge their exposure. The gross national income (GNI) per capita and GDP per capita annual growth (GDPPKG) rate are used to control for mean income and economic growth rate respectively. Mean years of schooling are used to control for the effect of education, governance index, derived using a principal component analysis from six governance indicators[16] to control for institutional influence. Finally, expenditure on health and assets are used to condition for the effect of public sector spending on basic health care and non-financial assets accumulation respectively. Financial inclusion data are accessed from the Global Findex (2011), mean years of school and income inequality from UNDP (2011) and the other variables from World Bank Development Indicators (2014). The choice of these control variables is based on the theoretical discussion in Section 4.3.2 and previous studies such as Dabla-Norris et al. (2015). Meanwhile, Table 4.1b at the end of the chapter provides summary statistics of the welfare proxies (dependent) and the control variables. Simple correlation analysis is then performed to determine correlated variables and highly correlated variables are not included in the same model (see Table 4.1a for details). The analysis also controls for heteroskedasticity by using robust standard error options in the estimation of all the models. From Equation 4.1, three different models are estimated and only models that are significant and make economic sense, with R-squared equal to or greater than 20%, are reported.

Model 1: $Y_i = \alpha + \beta_1 FI_i + \beta_2 logGNI_i + \beta_3 GDPPKG_i + \beta_4 healthexp_i + \beta_5 logtrade_i + \beta_6 inf_i + \varepsilon_i$

Model 2: $Y_i = \alpha + \beta_1 FI_i + \beta_2 humk_i + \beta_3 GDPPKG_i + \beta_4 healthexp_i + \beta_5 logtrade_i + \beta_6 inf_i + \varepsilon_i$

Model 3: $Y_i = \alpha + \beta_1 FI_i + \beta_2 humk_i + \beta_3 GDPPKG_i + \beta_4 healthexp_i + \beta_5 logtrade_i + \beta_6 logassets_i + \varepsilon_i$

The association between financial inclusion and welfare is estimated, by regressing each measure of welfare against all the seven aspects of financial inclusion. For example, HDI and financial inclusion, this will amount to 3x5x7 = 105 models estimated for all the aspects of financial inclusion disaggregated by gender, rural and urban. Complete results are presented at the end of this chapter (Tables 4.2a to 4.13a).

[16] Control of corruption, voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality and rule of law (Kaufmann et al., 2010).

4.5 EMPIRICAL RESULTS

The correlation analysis showed that the livestock production index (assets) correlates at 1% level of significance with inflation rate and with gross domestic product per capita annual growth at 5% level of significance. Governance index, health expenditure, primary school enrolment and gross national income per capita are both correlated at 5% level of significance. Meanwhile gross national income per capita correlates at 1% level of significance with primary school enrolment. None of these highly correlated variables are included in the same equation to avoid the problem of multi-collinearity. We also controlled for the possibility of heteroskedasticity by using robust standard error options in the estimation of all the models.

Table 4.1a: Correlation coefficients between control variables

Variables	Assets	GDPPKG	Governance Index	Health Expenditure	Human Capital	Inflation	Log GNI
Assets	1.000	-0.436	0.287*	0.077	-0.083	-0.655***	0.025
Prob	-----	0.007**	0.085	0.649	0.622	0.000	0.885
GDPPKG	-0.436**	1.000	0.113	0.174	-0.001	0.400*	-0.179
Prob	0.007	-----	0.506	0.304	0.996	0.014	0.289
Governance	0.287*	0.113	1.000	0.477**	0.425**	-0.319*	0.478**
Index							
Prob	0.085	0.506	-----	0.003	0.009	0.055	0.003
Health	0.077	0.174	0.477**	1.000	0.208	-0.186	0.099
Expenditure							
Prob	0.649	0.304	0.003	-----	0.217	0.271	0.562
Human capital	-0.084	-0.001	0.425**	0.208	1.00	0.179	0.669***
Prob	0.622	0.996	0.009	0.217	-----	0.288	0.000
Inflation	-0.655***	0.400*	-0.319*	-0.186	0.179	1.000	-0.130
Prob	0.000	0.014	0.055	0.271	0.288	-----	0.445
Log GNI	0.025	-0.179	0.478**	0.099	0.669***	-0.130	1.000
Prob	0.885	0.289	0.003	0.562	0.000	0.445	-----

Note: ***, **, * denotes significance at the 1%, 5% and 10% levels respectively

Source: By authors

Four welfare indicators are used to examine their association with seven aspects of financial inclusion and the result of significant models are reported and discussed. Starting with HDI, four aspects of financial inclusion (account ownership, electronic payments, formal loan and saving) show a positive association with HDI. Tables 4.2 to 4.5 report these results.

Table 4.2: HDI and account

Models	Account	Account female	Account male	Account rural	Account urban
Model 1	0.002**	0.002**	0.001**	0.001**	0.001**
	(2.10)	(1.99)	(2.09)	(1.98)	(2.46)
Model 2	0.002***	0.002***	0.002***	0.002***	0.001**
	(3.45)	(3.15)	(3.53)	(3.31)	(1.93)
Model 3	0.002***	0.002***	0.002***	0.002***	0.001*
	(3.03)	(2.84)	(3.14)	(2.87)	(1.80)
No. observations	**37**	**37**	**37**	**37**	**37**
Adj-R-square	**0.78**	**0.78**	**0.79**	**0.78**	**0.76**

Notes: *t* statistics in parentheses

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

Source: By authors

Table 4.2 shows that the HDI has a positive association with account ownership, implying that formal account ownership may help to improve the overall welfare of individuals regardless of gender and geographical region. Since the dependent and independent variables are in their original scale, this means that a one unit increase in formal account ownership will lead to 0.002 units in overall HDI, holding other factors constant. However, the improvement is smaller for males, and in rural as well as urban areas (0.001 units). All nine models estimated are statistically significant at least at 10% level, with an average goodness of fit of above 75%.

Table 4.3: HDI and electronic payment

Models	E-pay devices	E-pay devices female	E-Pay devices male	E-pay devices rural	E-pay devices urban
Model 1	-0.003	-0.003*	-0.002**	-0.004**	0.000
	(-1.28)	(-1.76)	(-0.82)	(-2.20)	(0.02)
Model 2	0.004***	0.003***	0.005***	0.004***	0.003**
	(2.85)	(2.95)	(2.25)	(2.80)	(2.92)
Model 3	0.004***	0.002**	0.004**	0.003**	0.002**
	(2.66)	(2.19)	(2.10)	(2.57)	(2.51)
No. of observations	**37**	**37**	**37**	**37**	**37**
Adj-R-square	**0.78**	**0.78**	**0.78**	**0.78**	**0.77**

Notes: *t* statistics in parentheses

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

Source: By authors

When it comes to the association between HDI and electronic payment devices (Table 4.3), the results are mixed, with the first model estimated suggesting a negative association whereas the other two models indicate positive and significant association between electronic payment and HDI. This is likely to reflect the reality that not everyone derives the same level of satisfaction and gain from

using financial services. Some individuals may find themselves in debt because of using financial services, hence the negative relationship holds. On the other hand, others may benefit significantly by using financial services, for example by using electronic payment systems to receive payment from the sale of goods and remittances and to pay quickly for goods rather than standing in a queue to get cash from a teller. Overall, these outcomes are expected from using financial services.

Table 4.4: HDI and formal loan

Models	**Formal loan**	**Formal loan female**	**Formal loan male**	**Formal loan rural**	**Formal loan urban**
Model 1	0.006**	0.005	0.006**	0.006**	0.002
	(2.24)	(1.60)	(2.66)	(2.55)	(0.92)
Model 2	0.007*	0.003	0.007**	0.007*	0.002
	(1.66)	(0.95)	(2.34)	(1.86)	(0.75)
Model 3	0.007	0.002	0.008**	0.007*	0.002
	(1.56)	(0.72)	(2.28)	(1.70)	(0.76)
No. of observations	**37**	**37**	**37**	**37**	**37**
Adj-R-square	**0.78**	**0.78**	**0.78**	**0.78**	**0.77**

Notes: *t* statistics in parentheses

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

Source: By authors

Finally, for the association between HDI and formal loan and saving, the results are positive, as expected, but weak as most of the results are not significant (Tables 4.4 and 4.5). However, it should be noted that the HDI is a composite index comprising life expectancy at birth, years of schooling and the standard of living as measured by gross national income per capita (PPP$). As such, it may be difficult to determine the true association and thus other welfare indicators are considered. Furthermore, evidence from the results suggests that the magnitude of the association between HDI and financial inclusion is small, as indicated by the estimated coefficients.

Table 4.5: HDI and formal saving

Models	**Formal saving**	**Formal saving female**	**Formal saving male**	**Formal saving rural**	**Formal saving urban**
Model 1	0.001	0.004**	0.002*	0.003*	0.001
	(1.02)	(2.08)	(1.88)	(1.89)	(1.63)
Model 2	0.001	0.003*	0.003*	0.003	0.001
	(0.65)	(1.65)	(1.78)	(1.48)	(1.09)
Model 3	0.000	0.003	0.002	0.002	0.001
	(0.47)	(1.37)	(1.52)	(1.15)	(1.01)
No. of observations	**37**	**37**	**37**	**37**	**37**
Adj-R-square	**0.78**	**0.78**	**0.78**	**0.78**	**0.77**

Notes: *t* statistics in parentheses

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

Source: By authors

A second measure of welfare discussed in this chapter is headcount poverty ratio as measured by less than US$1.25 a day. We expect financial inclusion to reduce the number of people living on less than US$1.25 a day by offering them the opportunity to accumulate assets through saving for retirement or small microenterprise activities, smoothing consumption and managing risk. However, from the seven aspects of financial inclusion examined only health insurance shows a negative association with poverty headcount ratio. This means that holding other factors constant, a one unit increase in access to health insurance will reduce the overall headcount poverty ratio by 2.8 units, and between gender, it reduces the headcount poverty ratio by 2.7 units for female and 2.4 units for male. Across the regions and particularly in the rural areas, a one unit increase in access to health insurance reduces the headcount poverty ratio by 2.9 units, holding other factors constant. Health insurance also reduces headcount poverty in urban areas but the effect is insignificant (see Table 4.6, model 2). This relationship is significant at least at the 10% level with a goodness of fit of above 35%. This demonstrates the importance of health insurance for the poor, such as micro-insurance to reduce out-of-pocket expenditure on health care services and to avoid asset loss. Another aspect of financial inclusion that had a negative association with headcount poverty ratio is loans to pay school fees. Although only three out of the fifteen models estimated are statistically significant at most at the 5% level, the rest display a negative relationship with headcount poverty ratio except in urban areas where the relationship is positive but insignificant (Table 4.7).

Table 4.6: Poverty headcount ratio and health insurance

Models	**Health insurance**	**Health insurance female**	**Health insurance male**	**Health insurance rural**	**Health insurance urban**
Model 1	-0.718	-0.677	-0.600	-0.871	-0.326
	(-0.79)	(-0.82)	(-0.72)	(-0.98)	(-0.63)
Model 2	-2.831**	-2.743*	-2.351**	-2.905**	-1.069
	(-2.36)	(-1.94)	(-2.46)	(-2.03)	(-1.09)
Model 3	-2.058	-1.919	-1.777	-2.026	-0.857
	(-1.62)	(-1.55)	(-1.62)	(-1.30)	(-0.92)
No. of observations	**37**	**37**	**37**	**37**	**37**
Adj-R-square	**0.37**	**0.37**	**0.36**	**0.37**	**0.33**

Notes: *t* statistics in parentheses

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

Source: By authors

Table 4.7: Poverty headcount ratio and loan to pay school fees

Models	Educloan	Educloan female	Educloan male	Educloan rural	Educloan urban
Model 1	-0.845	-0.616	-0.875	-0.916	0.312
	(-1.18)	(-0.86)	(-1.27)	(-1.46)	(0.44)
Model 2	-1.24	-0.758	-1.392*	-1.282**	0.433
	(-1.60)	(-0.89)	(-1.85)	(-1.99)	(0.53)
Model 3	-1.006	-0.562	-1.184	-1.069*	0.587
	(-1.29)	(-0.63)	(-1.61)	(-1.67)	(0.71)
No. of observations	**37**	**37**	**37**	**37**	**37**
Adj-R-square	**0.35**	**0.33**	**0.37**	**0.36**	**0.32**

Notes: *t* statistics in parentheses

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

Source: By authors

These results suggest that financial inclusion, specifically health insurance and loans to pay school fees, are essential strategies to reduce the number of people living on less than $1.25 a day. That is, improving access to these essential financial services across the entire population will enhance welfare of the society.

Thirdly, we also examined the association between the under-five mortality rate per 1,000 live births and the seven aspects of financial inclusion: only account ownership, formal loan and health insurance showed significant results. We expect financial inclusion to assist individuals build assets as a cushion for adverse economic conditions. The results reported in Tables 4.8 to 4.10 confirm our *a priori* expectations in Section 4.4.1 of a negative association. For example, account ownership serves as the entry level into the formal financial system, enabling individuals to accumulate savings that can be used to mitigate negative shocks such as illness. It also enables users to create a transaction history, facilitating easy access to credit for emergencies. From Table 4.8 model 1, the estimates mean that a one unit increase in account ownership will reduce the overall under-five mortality rate per 1,000 live births by 0.84 units, holding other factors constant. Disaggregating the data, a one unit increase in account ownership reduces the under-five mortality rate per 1,000 live births by 0.81 units for females, 0.82 units for males and 0.83 units for residents in rural areas, holding other factors constant.

Table 4.8: Under five mortality and account

Models	Account	Account female	Account male	Account Rural	Account urban
Model 1	-0.839**	-0.806*	-0.815**	-0.828**	-0.263
	(-2.24)	(-1.94)	(-2.38)	(-2.42)	(-0.79)
Model 2	-0.741*	-0.695**	-0.745**	-0.774**	-0.154
	(-1.71)	(-2.46)	(-1.98)	(-2.00)	(-0.41)
Model 3	-0.755*	-0.707	-0.757**	-0.786**	-0.176
	(-1.74)	(-1.43)	(-2.01)	(-2.02)	(-0.48)
No. of observations	**37**	**37**	**37**	**37**	**37**
Adj-R-square	**0.42**	**0.40**	**0.44**	**0.44**	**0.36**

Notes: *t* statistics in parentheses

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

Source: By authors

Table 4.9: Under five mortality per 1,000 live births and formal loans

Models	Formal loan	Formal Loan female	Formal Loan male	Formal Loan rural	Formal Loan urban
Model 1	-3.706**	-3.008	-3.422***	-3.684***	-0.394
	(-2.27)	(-1.61)	(-2.82)	(-2.71)	(-0.27)
Model 2	-3.286*	-2.374	-3.196**	-3.475**	-0.095
	(-1.69)	(-1.27)	(-2.17)	(-2.14)	(-0.07)
Model 3	-3.529*	-2.647	-3.361**	-3.788**	-0.131
	(-1.85)	(-1.46)	(-2.32)	(-2.40)	(-0.10)
No. of observations	**37**	**37**	**37**	**37**	**37**
Adj-R-square	**0.52**	**0.51**	**0.53**	**0.53**	**0.47**

Notes: *t* statistics in parentheses

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

Source: By authors

The interpretation of formal loan and health insurance are similar, as shown above. However, it is important to observe that is the magnitude of the coefficient for formal loans and health insurance is higher than that of account ownership, suggesting that the effect of financial inclusion on welfare is felt more when individuals use financial access. Comparing the results between rural and urban areas, the evidence revealed rural dwellers benefit more than urban areas. This reflects a shortage of services in the rural areas. A look at the World Bank World Development Indicators database (WDI) reveals that rural population (% of total population) in sub-Saharan Africa is between 56% and 88% with the exception of countries such as South Africa, Djibouti, Gabon, Botswana, Mauritania and Cape Verde. Furthermore, access to electricity in rural areas (% of rural population) ranged from 1.2% to 23% with the exception of South Africa (67%), Ghana, Cape Verde and Sao Tome above 40%, and Mauritius (100%). This highlights the need for service delivery in the rural areas and the impact this will have on welfare. For example, from Table 4.9 model 1, it can be seen

that a one unit increase in formal loans reduces the under-five mortality rate per 1,000 live births in rural areas by 3.7 units and the same increase will only reduce the under-five mortality rate per 1,000 live births in urban areas by 0.39 units: the effect is not significant. Similarly, holding other factors constant, a one unit increase in access to health insurance reduces the under-five mortality rate per 1,000 live births in rural areas by 3.6 units compared to an insignificant 1.4 unit reduction reported in urban areas (see Table 4.10).

Table 4.10: Under five mortality per 1,000 live births and health insurance

Models	**Health insurance**	**Health insurance female**	**Health insurance male**	**Health insurance rural**	**Health insurance urban**
Model 1	-3.122	-1.064	-3.738**	-3.583*	-1.391
	(-1.51)	(-0.66)	(-2.14)	(-1.78)	(-1.34)
Model 2	-3.049	-1.442	-3.472**	-4.045*	-0.495
	(-1.45)	(-0.76)	(-2.46)	(-1.72)	(-0.51)
Model 3	-2.837	-1.273	--3.286**	-3.841*	-0.513
	(-1.42)	(-0.68)	(-2.23)	(-1.66)	(-0.53)
No. of observations	**37**	**37**	**37**	**37**	**37**
Adj-R-square	**0.50**	**0.53**	**0.47**	**0.51**	**0.48**

Notes: *t* statistics in parentheses

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

Source: By authors

The final indicator of welfare examined is the association of financial inclusion with income inequality as measured by the Gini coefficient. As discussed earlier in the theoretical linkages section 4.3.2, financial inclusion is likely to increase income inequality in the short run particularly when the level is low (as analysed in Chapter 2). Thus, based on the analysis, three aspects of financial inclusion – account use for business purposes, electronic payment and formal saving – have a positive association with Gini coefficient. This means that these aspects of financial inclusion will increase income inequality in the short run. The interpretation of the inequality income results is somewhat different from the previous results because the dependent variable Gini coefficient is log-transformed and the independent variable-financial inclusion is in its original state. Hence, as shown in Table 4.11, a one unit increase in access to account use for business purposes will increase the overall income inequality by 1.1% (100*0.011 = 1.1%), (100*0.016 = 1.6% for female, (100*0.006 = 0.6) for male and (100*0.009 = 0.9 in the rural areas (model 1)) holding other factors constant.

For electronic payment and formal saving, the magnitude of the increase in income inequality is between 0.1% and 0.6% at the aggregate and disaggregated between female, male and in the rural areas (Tables 4.12 and 4.13). The association is again positive and statistically significant in the

rural areas for account use for business purposes, electronic payment and formal saving reiterating the importance alluded to earlier (Column 5: Tables 4.11, 4.12 and 4.13). The same economic interpretation applies for electronic payment and formal saving.

Table 4.11: Gini coefficient and account use for business

Models	**Account bus**[17]	**Account Bus female**	**Account Bus male**	**Account Bus rural**	**Account Bus urban**
Model 1	0.011***	0.016***	0.006**	0.009***	0.001
	(3.14)	(3.33)	(2.65)	(2.82)	(1.05)
Model 2	0.011**	0.016***	0.006**	0.009**	0.001
	(2.61)	(2.85)	(2.24)	(2.58)	(0.68)
Model 3	0.011***	0.016***	0.006**	0.009***	0.001
	(2.69)	(2.95)	(2.30)	(2.69)	(0.71)
No. of observations	**37**	**37**	**37**	**37**	**37**
Adj-R-square	**0.35**	**0.37**	**0.31**	**0.32**	**0.26**

Notes: *t* statistics in parentheses

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

Source: By authors

Table 4.12: Gini and electronic payment

Models	**E-pay devices**	**E-pay devices female**	**E-Pay devices male**	**E-pay devices rural**	**E-pay devices urban**
Model 1	0.005**	0.006**	0.004	0.005*	0.003
	(2.03)	(2.32)	(1.55)	(1.79)	(1.22)
Model 2	0.006***	0.007***	0.005*	0.006**	0.003
	(2.85)	(3.51)	(1.93)	(2.57)	(1.43)
Model 3	0.006***	0.007***	0.005*	0.006**	0.003
	(2.77)	(3.40)	(1.93)	(2.50)	(1.46)
No. of observations	**37**	**37**	**37**	**37**	**37**
Adj-R-square	**0.35**	**0.37**	**0.31**	**0.33**	**0.30**

Notes: *t* statistics in parentheses

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

Source: By authors

[17] Percentage of adults who report using their accounts for business purposes only or for both business and personal transaction according to the Global Financial Inclusion Survey 2011.

Table 4.13: Gini and formal saving

Models	Formal saving	Formal saving female	Formal saving male	Formal saving rural	Formal saving urban
Model 1	0.001	0.004**	0.003**	0.004**	0.001
	(1.41)	(2.31)	(2.13)	(2.37)	(1.34)
Model 2	0.001	0.003**	0.003*	0.004**	0.001
	(1.33)	(1.95)	(1.92)	(2.09)	(1.24)
Model 3	0.001	0.005**	0.003**	0.004**	0.001
	(1.39)	(2.07)	(2.05)	(2.27)	(1.31)
No. of observations	**37**	**37**	**37**	**37**	**37**
Adj-R-square	**0.28**	**0.33**	**0.35**	**0.35**	**0.27**

Notes: *t* statistics in parentheses

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

Source: By authors

The positive relationship between financial inclusion and welfare can be explained with the urban governance and practice literature in Africa. Anchoring this result within the "*Africa on the rise narrative*" suggests that the growth has not translated into discernible improvement in the welfare of ordinary people. While the headcount poverty ratio in SSA has fallen from 56.75% in the 1990s to 42.65% by 2012, the levels of income inequality have been rising. For economic growth to translate into welfare improvement, poverty and income inequality should both decline over time with a rising level of economic growth. However, from the growth experienced so far in SSA, only Mauritius and Botswana have witnessed rising economic growth with declining trends in poverty, income inequality and unemployment (Obeng-Odoom, 2015). This suggests that the economic growth recorded so far by sub-Saharan African countries have benefited a few elites. Borrowing from the urban governance and practice, the following are likely to drive these results. First, most African governments continue to operate on inherited colonial institutions that focus on a top-down approach to urban governance and practices, which fail to account for the complexities of the informal nature of African economies. This creates a scenario where cities are the main drivers of growth as oppose to national economies, leading to unequal access to and control of resources (see Obeng-Odoom, 2016).

Second, the colonial institutional architecture also defines financial sector development and shapes economic opportunities with British common law conducive for financial development (banks and stock exchanges) relative to French civil law (see Gwama, 2014). This constrains financial sector development, especially equity and bond markets, and reduces banks' lending options, and coupled with interest caps in some SSA countries, increased banks' desire to hold excess non-remunerated liquidity (Saxegaard, 2006; Asongu, 2014; Maimbo and Gallegos, 2014). This translates into an argument that although account ownership has improved in sub-Saharan Africa, it does not

necessarily imply an increase in credit accessibility. This is possibly because some of the account holders may be first time users of financial services and thus have no transaction history. As such, banks will not lend to them even though they have accounts because the problems of information asymmetry, uncertainty and risk of default continue to hold. These reasons are likely to drive the positive relationship between financial inclusion and income inequality observed in the analysis.

The results from income inequality found in this study contradict the negative relationship between financial inclusion and income inequality documented in Asia, the developed and developing regions (Park and Mercado, 2015; García-Herrero and Turégano, 2015). The emerging evidence suggests that SSA is yet to experience inclusive and sustainable growth as the 'Africa rising' concept currently has a narrow focus on the formal sector and neglects the informal sector that supports livelihoods for millions of Africans.

4.6 CONCLUSION

This chapter analysed the relationship between four measures of welfare and seven aspects of financial inclusion in a cross-section of 37 SSA countries using the Global Findex 2011 dataset. The welfare measures are HDI, headcount poverty ratio, under-five mortality rate per 1,000 live births and income inequality, and financial inclusion aspects are account ownership, account use for business, formal loans for school fees, electronic payment devices, health insurance, formal loan and formal saving.

Overall, the findings of this chapter are summarised as follows: first, HDI has a positive relationship with account ownership, formal loan and saving. However, not all the models estimated for formal loan and saving were statistically significant, particularly in urban areas. Electronic payment showed both positive and negative association with HDI. The positive and negative relationships are expected since not everyone will derive the same benefit from using financial services.

Secondly, headcount poverty had a negative relationship with health insurance and loan to pay school fees. The relationship is negative across all segments of the population except in urban areas where the relationship is positive for loan to pay school fees.

Thirdly, the evidence showed that the under-five mortality rate per 1,000 live births has a negative and statistically significant relationship with account ownership, formal loan and health insurance. The relationship is stronger in rural areas, and when males have access to formal loan and insurance compared to females.

Finally, income inequality showed a positive and statistically significant association with account use for business purposes, electronic payment and formal loan. These results are consistent with the long-run *U-shape relationship* found in Chapter 3 and reflect the true reality in SSA: robust economic growth with rising income inequality. This is very interesting as the two chapters used different datasets. Anchoring these results within the "*Africa rising narrative*" confirmed Obeng-Odoom's (2015 and 2016) findings that urban governance in Africa suffers from internal and externally imposed and colonial inherited problems. That is, colonial institutions principally designed to suppress Africans left behind institutions that propagate uneven development and this has been re-enforced by current urban governance and practice in Africa after independence.

The findings have several implications for development policy makers in SSA and in Africa as a whole. Literature has established that the operation of the financial system can determine who starts a business and who cannot, as well as who can and cannot pay for education. Thus, finance influences the gap between the rich and the poor and the extent of persistence across generations. Consequently, by influencing capital allocation, the financial system can change both the rate of economic growth and the demand for labour, with serious implications on poverty and income distribution (Demirgüç-Kunt and Levine, 2009: 2). Given the established link between colonial institutions and financial development highlighted in Section 4.5, policy makers in SSA are strongly encouraged to engage in genuine democratic governance to improve the quality and functioning of institutions to support financial sector development. Furthermore, a comprehensive approach to development and growth encompassing both top-down and bottom-up approaches should override the previous narrow focus on the formal sector in order to promote interaction and dialogue across all sectors of the economy. A bottom-up approach encourages local community participation in development initiatives, ensures community ownership of development projects, and enhances commitment and accountability to the development project (see Kaiser, 2012). This will stimulate viable economic activities in the formal and informal sectors of the economy and encourage financial service providers to take advantage of these opportunities and expand outreach. Finally, telecommunication technology and innovation in financial services delivery is encouraged to overcome the infrastructure deficiency. The successful models of M-Pesa and Equity Bank in Kenya demonstrate that banking the poor is a viable business and this model is therefore worthy of emulation. Hence, for development to have a trickle-down effect, the poor should be the centre of concern of development efforts. Given the cross-sectional nature of our dataset, these should be interpreted as associative and not causal effects. Although we draw insights from excess liquidity and institutional influence to advance possible underlying factors driving the results, none were modelled, hence these serve as potential areas for further research.

In the next chapter, because of data limitation, the analysis zoomed on South Africa to provide more insights of emerging evidence from Chapter 4 at the individual level. The focus will be to examine how financial inclusion changes asset ownership for those at the bottom end of assets distribution with implications for targeted social welfare policy interventions.

Table 4.1b: Summary statistics of dependent and control variables

VARIABLES	(1) N	(2) Mean	(3) SD	(4) Min	(5) Max
Headcount poverty (< $1.25 a day)	37	45.76	23.38	1	87.70
HDI	37	0.440	0.105	0.286	0.728
Under-5 mortality rate per 1000 live birth	37	100.7	41.98	15.10	185.3
GINI coefficient	37	44.66	7.829	33.30	64.30
Log GNI per capita	37	1.644	0.0729	1.522	1.808
GDP per capita growth	37	2.267	3.142	-6.866	9.400
Human capital	37	4.557	2.120	1.200	8.900
Health expenditure/GDP	37	2.981	1.550	0.600	8.500
Log trade/GDP	37	1.889	0.176	1.522	2.184
Log assets (livestock production index)	37	2.033	0.399	-0.301	2.283
Inflation	37	10.15	16.16	-3.704	99.25

Source: By Authors

Table 4.2a: Human development index and account

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Account	**0.002[b]**	**0.002[a]**	**0.002[a]**												
	(2.10)	**(3.43)**	**(3.03)**												
Account				**0.002[c]**	**0.002[a]**	**0.002[a]**									
female				**(1.99)**	**(3.15)**	**(2.84)**									
Account							**0.001[b]**	**0.002[a]**	**0.002[a]**						
Male							**(2.09)**	**(3.53)**	**(3.14)**						
Account										**0.001[b]**	**0.002[a]**	**0.002[a]**			
Rural										**(1.98)**	**(3.31)**	**(2.87)**			
Account													**0.001[b]**	**0.001[c]**	**0.001[c]**
Urban													**(2.46)**	**(1.93)**	**(1.80)**
LogGNI	0.171[a]			0.172[a]			0.173[a]			0.178[a]			0.179[a]		
	(6.02)			(6.15)			(6.09)			(6.59)			(8.31)		
GDPPKG	-0.002	-0.003	-0.004	-0.002	-0.003	-0.004	-0.002	-0.003	-0.004	-0.003	-0.004	-0.004	-0.002	-0.002	-0.003
	(-0.91)	(-0.89)	(-0.94)	(-0.90)	(-0.88)	(-0.92)	(-0.87)	(-0.86)	(-0.92)	(-1.02)	(-1.02)	(-1.04)	(-0.72)	(-0.59)	(-0.69)
Health	-0.001	-0.009[c]	-0.007	-0.001	-0.009[c]	-0.007	-0.001	-0.009[c]	-0.007	-0.001	-0.009[c]	-0.007	-0.002	-0.011[c]	-0.009
expenditure	(-0.22)	(-1.93)	(-1.50)	(-0.21)	(-1.90)	(-1.50)	(-0.20)	(-1.94)	(-1.51)	(-0.12)	(-1.82)	(-1.43)	(-0.47)	(-1.82)	(-1.47)
Logtrade	0.016	-0.041	-0.040	0.017	-0.039	-0.038	0.016	-0.043	-0.043	0.019	-0.039	-0.039	0.028	-0.019	-0.020
	(0.42)	(-0.74)	(-0.70)	(0.44)	(-0.67)	(-0.63)	(0.41)	(-0.82)	(-0.77)	(0.46)	(-0.72)	(-0.66)	(0.70)	(-0.31)	(-0.32)
Inflation	-0.001	-0.002[a]		-0.001	-0.002[a]		-0.001	-0.002[a]		-0.001	-0.002[a]		-0.000	-0.002[a]	
	(-1.33)	(-5.03)		(-1.24)	(-4.72)		(-1.30)	(-5.24)		(-1.20)	(-5.06)		(-1.02)	(-3.90)	
human		0.037[a]	0.037[a]		0.037[a]	0.037[a]		0.038[a]	0.037[a]		0.039[a]	0.038[a]		0.040[a]	0.039[a]
capital		(8.38)	(8.33)		(8.57)	(8.55)		(8.43)	(8.38)		(8.57)	(8.49)		(9.58)	(9.95)
logAssets			0.070[a]			0.070[a]			0.071[a]			0.072[a]			0.065[b]
			(3.90)			(3.77)			(4.01)			(3.92)			(3.10)
Constant	-0.120	0.358[a]	0.193[c]	-0.121	0.359[a]	0.194	-0.126	0.358[a]	0.192[c]	-0.141	0.357[a]	0.188	-0.170[c]	0.313[a]	0.162
	(-1.29)	(3.73)	(1.65)	(-1.30)	(3.57)	(1.57)	(-1.37)	(3.87)	(1.72)	(-1.49)	(3.68)	(1.58)	(-1.90)	(2.89)	(1.15)
No obs	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
R-Sq Adj	0.74	0.82	0.79	0.74	0.81	0.79	0.74	0.83	0.80	0.74	0.81	0.79	0.75	0.78	0.75

t statistics in parentheses, a, b and c indicates 1%, 5% and 10% level of significance

Table 4.3a: Human development index and electronic payment (EP)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
EP	**-0.003**	**0.004[a]**	**0.004[a]**												
	(-1.28)	**(2.87)**	**(2.66)**												
EP				**-0.003[c]**	**0.003[a]**	**0.002[b]**									
female				**(-1.76)**	**(2.95)**	**(2.19)**									
EP							**-0.002**	**0.005[b]**	**0.004[b]**						
Male							**(-0.82)**	**(2.25)**	**(2.10)**						
EP										**-0.004[b]**	**0.004[b]**	**0.003[b]**			
rural										**(-2.20)**	**(2.80)**	**(2.57)**			
EP													**0.000**	**0.003[a]**	**0.002[b]**
Urban													**(0.02)**	**(2.92)**	**(2.51)**
LogGNI	0.218a			0.217[a]			0.216[a]			0.219[a]			0.206[a]		
	(8.98)			(9.18)			(9.28)			(9.77)			(7.61)		
GDPPKG	-0.000	-0.000	-0.001	-0.000	-0.000	-0.001	-0.000	-0.000	-0.001	-0.000	-0.000	-0.001	-0.000	-0.000	-0.001
	(-0.08)	(-0.03)	(-0.18)	(-0.14)	(-0.03)	(-0.17)	(-0.03)	(-0.08)	(-0.22)	(-0.03)	(-0.07)	(-0.20)	(-0.05)	(-0.06)	(-0.22)
Health	0.000	-0.010[c]	-0.009	0.000	-0.010	-0.009	-0.000	-0.010[c]	-0.009	-0.000	-0.010[c]	-0.008	-0.000	-0.011	-0.009
expenditure	(0.02)	(-1.70)	(-1.39)	(0.05)	(-1.66)	(-1.37)	(-0.02)	(-1.77)	(-1.44)	(-0.02)	(-1.63)	(-1.35)	(-0.08)	(-1.74)	(-1.42)
Logtrade	0.045	-0.039	-0.035	0.046	-0.031	-0.028	0.043	-0.044	-0.041	0.049	-0.038	-0.034	0.035	-0.029	-0.028
	(0.89)	(-0.60)	(-0.51)	(0.88)	(-0.47)	(-0.38)	(0.87)	(-0.70)	(-0.61)	(0.97)	(-0.60)	(-0.49)	(0.72)	(-0.45)	(-0.39)
Inflation	-0.000	-0.002[b]		-0.000	-0.002[a]		-0.000	-0.002[a]		-0.000	-0.002[a]		-0.000	-0.002[a]	
	(-0.25)	(-3.59)		(-0.21)	(-3.46)		(-0.34)	(-3.83)		(-0.11)	(-3.53)		(-0.60)	(-3.49)	
human		0.044[a]	0.044[a]		0.045[a]	0.044[a]		0.043[a]	0.043[a]		0.045[a]	0.044[a]		0.044[a]	0.043[a]
capital		(9.05)	(8.88)		(8.70)	(8.45)		(9.24)	(9.18)		(8.88)	(8.70)		(9.04)	(8.81)
LogAssets			0.077[a]			0.076[a]			0.078[a]			0.079[a]			0.072[a]
			(2.94)			(2.85)			(3.12)			(2.92)			(2.79)
Constant	-0.286[b]	0.354[a]	0.167	-0.286[b]	0.341[a]	0.156	-0.276[b]	0.364[a]	0.176	-0.295[b]	0.351[a]	0.159	-0.238[b]	0.339[a]	0.168
	(-2.60)	(3.13)	(1.06)	(-2.62)	(2.85)	(0.93)	(-2.62)	(3.33)	(1.20)	(-2.74)	(3.10)	(1.00)	(-2.10)	(2.96)	(1.04)
No obs	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
R-Sq Adj	0.71	0.76	0.73	0.72	0.75	0.72	0.71	0.77	0.74	0.72	0.75	0.73	0.71	0.76	0.73

t statistics in parentheses, a, b and c indicates 1%, 5% and 10% level of significance

Table 4.4a: Human and formal loan

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Formal	**0.006[b]**	**0.007[c]**	**0.007**												
Loan	**(2.24)**	**(1.66)**	**(1.56)**												
formal				**0.005**	**0.003**	**0.002**									
Loan-fem				**(1.60)**	**(0.95)**	**(0.72)**									
formal							**0.006[a]**	**0.007[b]**	**0.008[b]**						
Loan-male							**(2.66)**	**(2.34)**	**(2.28)**						
formal										**0.006[b]**	**0.007[c]**	**0.007**			
Loan rural										**(2.55)**	**(1.86)**	**(1.70)**			
formal													**0.002**	**0.002**	**0.002**
loan urban													**(0.92)**	**(0.75)**	**(0.76)**
logGNI	0.191[a]			0.202[a]			0.183[a]			0.192[a]			0.203[a]		
	(8.92)			(9.21)			(8.08)			(9.30)			(9.08)		
GDPPKG	-0.002	-0.002	-0.003	-0.001	-0.001	-0.002	-0.002	-0.003	-0.004	-0.003	-0.003	-0.004	-0.000	-0.001	-0.001
	(-0.73)	(-0.54)	(-0.65)	(-0.45)	(-0.27)	(-0.37)	(-0.84)	(-0.72)	(-0.83)	(-1.07)	(-0.80)	(-0.91)	(-0.08)	(-0.13)	(-0.23)
health	-0.000	-0.009	-0.007	-0.001	-0.010	-0.008	0.001	-0.007	-0.006	0.000	-0.008	-0.007	-0.001	-0.010	-0.008
expenditure	(-0.06)	(-1.59)	(-1.29)	(-0.17)	(-1.60)	(-1.34)	(0.16)	(-1.43)	(-1.09)	(0.07)	(-1.56)	(-1.22)	(-0.13)	(-1.56)	(-1.32)
Logtrade	0.012	-0.039	-0.040	0.022	-0.024	-0.023	0.008	-0.049	-0.051	0.005	-0.049	-0.051	0.036	-0.015	-0.014
	(0.28)	(-0.71)	(-0.69)	(0.50)	(-0.39)	(-0.33)	(0.20)	(-0.92)	(-0.92)	(0.12)	(-0.93)	(-0.90)	(0.75)	(-0.23)	(-0.20)
Inflation	-0.000	-0.002[a]		-0.000	-0.002[a]		-0.000	-0.002[a]		-0.000	-0.002[a]		-0.000	-0.002[a]	
	(-0.35)	(-3.67)		(-0.47)	(-3.37)		(-0.32)	(-3.93)		(-0.19)	(-3.69)		(-0.55)	(-3.28)	
human		0.042[a]	0.042[a]		0.045[a]	0.044[a]		0.040[a]	0.040[a]		0.042[a]	0.042[a]		0.045[a]	0.044[a]
capital		(8.69)	(8.81)		(8.71)	(8.59)		(8.54)	(8.73)		(9.10)	(9.16)		(8.42)	(8.37)
LogAssets			0.059[a]			0.069[a]			0.053[a]			0.054[a]			0.071[a]
			(2.93)			(2.83)			(3.00)			(2.83)			(2.78)
Constant	-0.179[b]	0.337[a]	0.201	-0.218[b]	0.321[a]	0.158	-0.155[c]	0.349[a]	0.229[b]	-0.169[c]	0.355[a]	0.231[c]	-0.246[b]	0.304*	0.135
	(-2.02)	(3.40)	(1.59)	(-2.17)	(2.88)	(1.02)	(-1.76)	(3.69)	(2.01)	(-1.90)	(3.74)	(1.93)	(-2.20)	(2.44)	(0.82)
No obs	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
R-Sq Adj	0.74	0.77	0.74	0.72	0.74	0.71	0.74	0.80	0.78	0.74	0.78	0.75	0.71	0.73	0.71

t statistics in parentheses, a, b and c indicates 1%, 5% and 10% level of significance

Table 4.5a: Human development index and formal saving

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Save formal	**0.001**	**0.001**	**0.000**												
	(1.02)	**(0.65)**	**(0.47)**												
Save formal				**0.002**[c]	**0.003**[c]	**0.002**									
male				**(1.88)**	**(1.78)**	**(1.52)**									
Save formal							**0.004**[b]	**0.003**[c]	**0.003**						
female							**(2.08)**	**(1.65)**	**(1.37)**						
Save formal										**0.003**[c]	**0.003**	**0.002**			
rural										**(1.89)**	**(1.48)**	**(1.15)**			
Save formal													**0.001**	**0.001**	**0.001**
urban													**(1.63)**	**(1.09)**	**(1.01)**
LogGNI	0.203[a]			0.185[a]			0.179[a]			0.187[a]			0.192[a]		
	(9.17)			(7.73)			(7.03)			(7.88)			(8.09)		
GDPPKG	-0.001	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002	-0.003	-0.002	-0.002	-0.002
	(-0.38)	(-0.21)	(-0.29)	(-0.64)	(-0.50)	(-0.61)	(-0.96)	(-0.68)	(-0.73)	(-0.84)	(-0.59)	(-0.64)	(-0.65)	(-0.37)	(-0.46)
Health	0.002	-0.009	-0.007	0.000	-0.008	-0.006	-0.001	-0.009	-0.007	-0.001	-0.009[c]	-0.008	0.001	-0.008	-0.007
expenditure	(0.29)	(-1.41)	(-1.18)	(0.02)	(-1.53)	(-1.19)	(-0.13)	(-1.58)	(-1.25)	(-0.19)	(-1.66)	(-1.33)	(0.15)	(-1.37)	(-1.13)
Logtrade	0.028	-0.020	-0.018	0.020	-0.029	-0.029	0.019	-0.026	-0.026	0.024	-0.023	-0.023	0.023	-0.022	-0.021
	(0.59)	(-0.29)	(-0.25)	(0.50)	(-0.50)	(-0.47)	(0.46)	(-0.42)	(-0.40)	(0.58)	(-0.39)	(-0.36)	(0.51)	(-0.33)	(-0.30)
Inflation	-0.000	-0.002[a]		-0.000	-0.002[a]		-0.001	-0.002[a]		-0.000	-0.002[a]		-0.000	-0.002[a]	
	(-0.67)	(-3.24)		(-0.96)	(-3.75)		(-1.18)	(-3.72)		(-1.12)	(-3.68)		(-0.52)	(-3.19)	
human		0.045[a]	0.045[a]		0.041[a]	0.040[a]		0.040[a]	0.040[a]		0.041[a]	0.041[a]		0.043[a]	0.043[a]
capital		(8.83)	(8.60)		(8.76)	(8.80)		(8.10)	(8.02)		(8.48)	(8.36)		(8.39)	(8.56)
LogAssets			0.073[a]			0.066[a]			0.068[a]			0.070[a]			0.067[b]
			(2.76)			(2.96)			(2.98)			(2.99)			(2.60)
Constant	-0.253[b]	0.305[b]	0.136	-0.171[c]	0.328[a]	0.175	-0.149	0.331[a]	0.170	-0.179[b]	0.324[a]	0.161	-0.196[c]	0.318[a]	0.162
	(-2.28)	(2.45)	(0.81)	(-1.92)	(3.16)	(1.28)	(-1.62)	(3.07)	(1.19)	(-2.00)	(3.03)	(1.12)	(-1.84)	(2.71)	(0.99)
No obs	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
R-Sq Adj	0.72	0.73	0.71	0.74	0.77	0.74	0.74	0.76	0.73	0.74	0.76	0.73	0.73	0.74	0.72

t statistics in parentheses, a, b and c indicates 1%, 5% and 10% level of significance

Table 4.6a: Poverty headcount ratio and health insurance

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Insurance	**-0.718**	**-2.831[b]**	**-2.058**												
	(-0.79)	**(-2.36)**	**(-1.62)**												
Health insu				**-0.600**	**-2.351[b]**	**-1.777**									
male				**(-0.72)**	**(-2.46)**	**(-1.62)**									
Health insu							**-0.677**	**-2.743[c]**	**-1.919**						
female							**(-0.82)**	**(-1.94)**	**(-1.55)**						
Health insu										**-0.871**	**-2.905[b]**	**-2.026**			
rural										**(-0.98)**	**(-2.03)**	**(-1.30)**			
Health insu													**-0.326**	**-1.069**	**-0.857**
urban													**(-0.63)**	**(-1.09)**	**(-0.92)**
logGNI	-40.578[a]			-40.586[a]			-41.195[a]			-40.925[a]			-41.643[a]		
	(-5.77)			(-5.51)			(-6.72)			(-6.57)			(-6.57)		
GDPPKG	-1.656	-1.337	-0.785	-1.618	-1.184	-0.669	-1.690	-1.467	-0.883	-1.650	-1.303	-0.785	-1.616	-1.110	-0.591
	(-1.55)	(-0.84)	(-0.46)	(-1.50)	(-0.74)	(-0.40)	(-1.59)	(-0.92)	(-0.51)	(-1.54)	(-0.82)	(-0.46)	(-1.50)	(-0.68)	(-0.35)
Health	2.075	3.748	2.523	2.020	3.519	2.386	2.041	3.735	2.504	2.166	3.957	2.668	1.798	2.608	1.731
expenditure	(1.21)	(1.38)	(0.92)	(1.19)	(1.34)	(0.89)	(1.19)	(1.33)	(0.90)	(1.24)	(1.43)	(0.95)	(1.07)	(1.00)	(0.65)
Logtrade	23.410	14.686	19.037	24.069	17.148	20.914	22.919	12.886	17.856	24.120	18.576	21.559	23.912	15.145	19.935
	(1.50)	(0.66)	(0.76)	(1.54)	(0.76)	(0.84)	(1.47)	(0.57)	(0.71)	(1.53)	(0.80)	(0.85)	(1.54)	(0.63)	(0.76)
Inflation	0.086	0.599[a]		0.075	0.551[a]		0.074	0.578[b]		0.108	0.630[b]		0.019	0.330	
	(0.49)	(2.74)		(0.44)	(2.95)		(0.43)	(2.25)		(0.64)	(2.64)		(0.13)	(1.48)	
human		-3.603	-3.763		-3.582	-3.697		-4.022[c]	-4.112[c]		-4.284[c]	-4.302		-3.983	-3.947
capital		(-1.55)	(-1.59)		(-1.51)	(-1.53)		(-1.82)	(-1.80)		(-1.97)	(-1.92)		(-1.54)	(-1.52)
LogAssets			-11.18			-10.05			-10.39			-12.13			-3.21
			(-1.08)			(-1.06)			(-1.00)			(-1.02)			(-0.36)
Constant	121.83[a]	29.36	50.57	120.77[a]	25.23	44.704	124.41[a]	33.439	51.574	121.203[a]	23.278	48.925	124.64[a]	31.479	32.636
	(3.51)	(0.75)	(0.86)	(3.37)	(0.64)	(0.78)	(3.74)	(0.84)	(0.86)	(3.47)	(0.55)	(0.80)	(3.72)	(0.75)	(0.56)
No obs	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
R-Sq Adj	0.58	0.30	0.23	0.58	0.29	0.23	0.58	0.28	0.22	0.59	0.28	0.22	0.58	0.23	0.20

t statistics in parentheses, a, b and c indicates 1%, 5% and 10% level of significance

Table 4.7a: Poverty headcount ratio and loan to pay school fees (Eduloan)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Eduloan	**-0.845**	**-1.240**	**-1.006**												
	(-1.18)	**(-1.60)**	**(-1.29)**												
Eduloan female				**-0.616**	**-0.758**	**-0.562**									
				(-0.86)	**(-0.89)**	**(-0.63)**									
Eduloan male							**-0.875**	**-1.392[c]**	**-1.184**						
							(-1.27)	**(-1.85)**	**(-1.61)**						
Eduloan rural										**-0.916**	**-1.282[b]**	**-1.069[c]**			
										(-1.46)	**(-1.99)**	**(-1.67)**			
Eduloan male													**0.312**	**0.433**	**0.587**
													(0.44)	**(0.53)**	**(0.71)**
LogGNI	-44.200[a]			-44.302[a]			-43.8[a]			-44.239[a]			-42.401[a]		
	(-7.67)			(-7.62)			(-7.81)			(-7.76)			(-7.50)		
GDPPKG	-1.946[c]	-1.684	-1.028	-1.867[c]	-1.484	-0.872	-1.906[c]	-1.680	-1.045	-1.684[c]	-1.300	-0.712	-1.347	-0.763	-0.185
	(-1.96)	(-1.08)	(-0.63)	(-1.86)	(-0.96)	(-0.54)	(-1.91)	(-1.07)	(-0.63)	(-1.72)	(-0.84)	(-0.44)	(-1.07)	(-0.42)	(-0.10)
Health	1.709	2.775	1.823	1.629	2.584	1.717	1.756	2.886	1.921	1.816	2.936	1.948	1.789	2.572	1.909
expenditure	(1.09)	(1.08)	(0.69)	(1.03)	(0.99)	(0.65)	(1.12)	(1.14)	(0.74)	(1.18)	(1.15)	(0.75)	(1.04)	(1.00)	(0.73)
Logtrade	24.374	21.322	25.126	25.98[c]	22.02	25.321	21.562	17.57	21.98	22.163	18.417	22.803	24.822	18.36	21.784
	(1.76)	(1.00)	(1.06)	(1.88)	(0.93)	(0.99)	(1.51)	(0.86)	(0.96)	(1.57)	(0.90)	(0.99)	(1.49)	(0.69)	(0.78)
Inflation	0.029	0.349		0.008	0.302		0.035	0.365[c]		0.038	0.359[c]		-0.038	0.211	
	(0.19)	(1.62)		(0.05)	(1.39)		(0.23)	(1.67)		(0.26)	(1.68)		(-0.24)	(0.89)	
human		-6.22[a]	-5.74[a]		-5.89[a]	-5.45[b]		-6.32[a]	-5.85[a]		-6.271[a]	-5.790[a]		-4.93[b]	-4.53[b]
capital		(-3.20)	(-2.88)		(-2.88)	(-2.62)		(-3.28)	(-2.96)		(-3.22)	(-2.89)		(-2.49)	(-2.32)
LogAssets			-3.369			-2.190			-4.085			-3.674			-0.328
			(-0.40)			(-0.25)			(-0.50)			(-0.45)			(-0.04)
Constant	138.86[a]	37.56	37.712	134.14[a]	30.68	29.31	143.23[a]	46.49	47.42	142.65[a]	42.004	42.28	120.57[a]	21.09	14.74
	(3.86)	(0.99)	(0.68)	(3.74)	(0.74)	(0.50)	(3.94)	(1.24)	(0.87)	(3.93)	(1.13)	(0.78)	(2.86)	(0.43)	(0.23)
No obs	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
R-Sq Adj	0.52	0.09	0.05	0.51	0.05	0.02	0.53	0.12	0.07	0.54	0.11	0.06	0.50	0.04	0.02

t statistics in parentheses, a, b and c indicates 1%, 5% and 10% level of significance

Table 4.8a: Under-five mortality per 1,000 live births and account

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Account	**-0.839[b]**	**-0.741[c]**	**-0.755[c]**												
	(-2.24)	**(-1.71)**	**(-1.74)**												
Account				**-0.806[c]**	**-0.695**	**-0.707**									
female				**(-1.94)**	**(-1.40)**	**(-1.43)**									
Account							**-0.815[b]**	**-0.745[b]**	**-0.757[b]**						
male							**(-2.38)**	**(-1.98)**	**(-2.01)**						
Account										**-0.828[b]**	**-0.774[c]**	**-0.786[b]**			
rural										**(-2.42)**	**(-2.00)**	**(-2.02)**			
Account													**-0.263**	**-0.154**	**-0.176**
urban													**(-0.79)**	**(-0.41)**	**(-0.48)**
LogGNI	-30.33*			-31.49[b]			-30.421[b]			-32.785[b]			-43.211[a]		
	(-2.13)			(-2.26)			(-2.10)			(-2.35)			(-3.09)		
GDPPKG	1.109	0.761	0.974	1.045	0.697	0.885	1.094	0.771	0.984	1.412	1.106	1.324	0.320	0.055	0.245
	(0.58)	(0.43)	(0.54)	(0.54)	(0.39)	(0.49)	(0.57)	(0.44)	(0.56)	(0.72)	(0.60)	(0.71)	(0.17)	(0.03)	(0.14)
Health	-10.242[a]	-8.052[b]	-8.236[b]	-10.25[a]	-8.038[b]	-8.188[b]	-10.267[a]	-8.056[b]	-8.245[b]	-10.48[a]	-8.197[a]	-8.390[b]	-10.143[b]	-7.703	-7.818[b]
expenditure	(-3.19)	(-2.58)	(-2.53)	(-3.10)	(-2.49)	(-2.45)	(-3.23)	(-2.63)	(-2.56)	(-3.32)	(-2.69)	(-2.63)	(-2.60)	(-1.95)	(-1.95)
Logtrade	39.456	57.938[c]	60.814	38.581	56.816	59.47	40.168	59.250[c]	62.149[c]	38.97	58.31[c]	61.16[c]	30.996	50.161	52.647
	(1.43)	(1.73)	(1.70)	(1.36)	(1.64)	(1.61)	(1.50)	(1.83)	(1.80)	(1.42)	(1.75)	(1.72)	(1.04)	(1.33)	(1.32)
Inflation	-0.617[a]	-0.277		-0.631[a]	-0.283		-0.616[a]	-0.274		-0.624[a]	-0.265		-0.725[a]	-0.286	
	(-3.29)	(-1.14)		(-3.29)	(-1.14)		(-3.27)	(-1.14)		(-3.39)	(-1.12)		(-3.47)	(-0.99)	
human		-10.02[a]	-9.903[a]		-10.20[a]	-10.10[a]		-10.03[a]	-9.92[a]		-10.31[a]	-10.20[a]		-12.12[a]	-11.97[a]
capital		(-3.63)	(-3.69)		(-3.50)	(-3.56)		(-3.85)	(-3.92)		(-4.05)	(-4.13)		(-3.92)	(-3.97)
LogAssets			14.430			14.283			14.345			13.996			14.273
			(1.41)			(1.37)			(1.42)			(1.40)			(1.20)
Constant	168.31[b]	77.211	39.448	171.32[b]	77.85	40.727	168.73[b]	76.546	38.976	174.36[b]	76.097	39.391	216.23[a]	91.645	54.952
	(2.49)	(1.29)	(0.51)	(2.50)	(1.26)	(0.51)	(2.51)	(1.32)	(0.52)	(2.57)	(1.28)	(0.51)	(3.01)	(1.35)	(0.62)
No obs	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
R-Sq Adj.	0.45	0.55	0.56	0.44	0.54	0.55	0.46	0.56	0.57	0.46	0.56	0.57	0.41	0.50	0.51

t statistics in parentheses, a, b and c indicates 1%, 5% and 10% level of significance

Table 4.9a: Under five mortality per 1,000 live births and formal loan

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Formal loan	**-3.706[b]**	**-3.286[c]**	**-3.529[c]**												
	(-2.27)	**(-1.69)**	**(-1.85)**												
Formal loan				**-3.008**	**-2.374**	**-2.647**									
female				**(-1.61)**	**(-1.27)**	**(-1.46)**									
Formal loan							**-3.42[a]**	**-3.196[b]**	**-3.36[b]**						
male							**(-2.82)**	**(-2.17)**	**(-2.32)**						
Formal loan										**-3.684[a]**	**-3.475[b]**	**-3.788[b]**			
rural										**(-2.71)**	**(-2.14)**	**(-2.40)**			
Formal loan													**-0.394**	**-0.095**	**-0.131**
urban													**(-0.27)**	**(-0.07)**	**(-0.10)**
logGNI	-39.79[a]			-45.76[a]			-35.61[a]			-40.24[a]			-48.48[a]		
	(-3.14)			(-3.33)			(-2.68)			(-3.27)			(-3.23)		
GDPPKG	0.950	0.704	1.008	0.625	0.387	0.694	1.089	0.836	1.108	1.525	1.290	1.715	-0.018	-0.137	-0.005
	(0.56)	(0.42)	(0.58)	(0.35)	(0.21)	(0.37)	(0.63)	(0.51)	(0.68)	(0.86)	(0.73)	(0.96)	(-0.01)	(-0.07)	(-0.00)
health	-10.61[a]	-8.19[a]	-8.41[a]	-10.21[a]	-7.689[b]	-7.90[b]	-11.24[a]	-8.87[a]	-9.075[a]	-11.02[a]	-8.55[a]	-8.870[a]	-10.49[b]	-7.794[c]	-7.880[c]
expenditure	(-3.48)	(-2.70)	(-2.65)	(-3.05)	(-2.23)	(-2.24)	(-3.68)	(-3.01)	(-2.95)	(-3.79)	(-3.00)	(-2.97)	(-2.64)	(-1.93)	(-1.92)
Logtrade	43.60[c]	60.93[b]	65.39[b]	38.27	55.651[c]	59.76[c]	45.096[c]	63.52[b]	67.794[b]	48.027[b]	66.37[b]	72.18[b]	29.269	49.798	51.88
	(1.79)	(1.96)	(1.99)	(1.50)	(1.65)	(1.68)	(1.75)	(2.03)	(2.04)	(1.97)	(2.21)	(2.26)	(0.95)	(1.29)	(1.26)
Inflation	-0.840[a]	-0.420[c]		-0.807[a]	-0.344		-0.848[a]	-0.46[b]		-0.885[a]	-0.465[c]		-0.756[a]	-0.275	
	(-4.17)	(-1.70)		(-3.84)	(-1.21)		(-4.19)	(-1.96)		(-4.25)	(-1.89)		(-3.62)	(-0.93)	
human		-11.147[a]	-10.96[a]		-12.10[a]	-11.94[a]		-10.60[a]	-10.43[a]		-11.25[a]	-11.01[a]		-12.79[a]	-12.74[a]
capital		(-4.30)	(-4.41)		(-4.54)	(-4.66)		(-4.11)	(-4.15)		(-4.65)	(-4.77)		(-4.58)	(-4.73)
LogAssets			21.347[b]			18.27			22.52[b]			24.347[b]			13.249
			(2.08)			(1.55)			(2.35)			(2.39)			(1.09)
Constant	194.94[a]	80.92	25.21	216.65[a]	87.53	39.635	181.93[a]	77.216	18.88	187.35[a]	71.54	6.858	231.94[a]	91.878	58.22
	(3.10)	(1.41)	(0.35)	(3.18)	(1.41)	(0.49)	(2.76)	(1.35)	(0.26)	(3.00)	(1.30)	(0.10)	(2.97)	(1.28)	(0.62)
No obs	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
R-Sq Adj.	0.46	0.55	0.56	0.43	0.52	0.53	0.47	0.57	0.58	0.47	0.57	0.58	0.40	0.50	0.50

t statistics in parentheses, a, b and c indicates 1%, 5% and 10% level of significance

Table 4.10a: Under five mortality per 1,000 live births and health insurance

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Insurance	**-3.122**	**-3.049**	**-2.837**												
	(-1.51)	**(-1.45)**	**(-1.42)**												
Health insur				**-3.738[b]**	**-3.472[b]**	**-3.286[b]**									
male				**(-2.14)**	**(-2.29)**	**(-2.23)**									
Health insur							**-1.064**	**-1.442**	**-1.273**						
female							**(-0.66)**	**(-0.76)**	**(-0.68)**						
Health insur										**-3.583[c]**	**-4.045[c]**	**-3.84[c]**			
rural										**(-1.78)**	**(-1.72)**	**(-1.66)**			
Health insur													**-1.391**	**-0.495**	**-0.513**
urban													**(-1.34)**	**(-0.51)**	**(-0.53)**
logGNI	-37.188[b]			-32.14[b]			-45.68[a]			-39.26[a]			-41.97[b]		
	(-2.39)			(-2.07)			(-2.91)			(-2.81)			(-2.56)		
GDPPKG	-0.129	-0.316	-0.154	0.064	-0.156	0.011	-0.118	-0.294	-0.144	-0.097	-0.320	-0.208	0.042	-0.110	0.044
	(-0.07)	(-0.18)	(-0.09)	(0.04)	(-0.10)	(0.01)	(-0.06)	(-0.16)	(-0.08)	(-0.06)	(-0.19)	(-0.12)	(0.02)	(-0.06)	(0.02)
Health	-8.842[b]	-6.482	-6.813[c]	-8.442[b]	-6.331[b]	-6.698	-9.98[b]	-7.164[c]	-7.384[c]	-8.56[b]	-5.805[c]	-6.133[c]	-10.06[b]	-7.762[c]	-7.90[c]
expendi ture	(-2.41)	(-1.80)	(-1.84)	(-2.51)	(-1.95)	(-2.01)	(-2.55)	(-1.83)	(-1.83)	(-2.39)	(-1.67)	(-1.73)	(-2.58)	(-1.94)	(-1.94)
Logtrade	25.341	45.621	47.093	27.718	47.684	48.908	27.129	46.843	48.824	28.482	49.797	50.055	27.56	48.25	50.37
	(0.83)	(1.29)	(1.24)	(0.91)	(1.42)	(1.37)	(0.87)	(1.24)	(1.19)	(1.00)	(1.51)	(1.42)	(0.85)	(1.23)	(1.21)
Inflation	-0.275	0.107		-0.141	0.178		-0.597[c]	-0.098		-0.212	0.262		-0.574[b]	-0.233	
	(-0.64)	(0.24)		(-0.37)	(0.51)		(-1.80)	(-0.24)		(-0.52)	(0.56)		(-2.00)	(-0.73)	
human		-10.93[a]	-10.98[a]		-10.20[a]	-10.24[a]		-12.11[a]	-12.14[a]		-11.33[a]	-11.32[a]		-12.18[a]	-12.11[a]
capital		(-4.32)	(-4.30)		(-4.04)	(-4.06)		(-4.47)	(-4.41)		(-4.86)	(-4.86)		(-4.18)	(-4.13)
LogAssets			-0.618			-3.226			7.005			-7.555			11.89
			(-0.04)			(-0.23)			(0.41)			(-0.39)			(0.90)
Constant	203.53[a]	93.15	92.86	185.11[b]	87.76	93.99	224.97[a]	94.33	75.36	202.43[a]	85.24	102.88	216.04[a]	93.06	62.31
	(2.75)	(1.49)	(0.98)	(2.48)	(1.47)	(1.13)	(2.93)	(1.40)	(0.75)	(2.81)	(1.44)	(1.13)	(2.83)	(1.34)	(0.66)
No obs	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
R-Sq Adj.	0.32	0.45	0.44	0.36	0.48	0.48	0.28	0.41	0.41	0.32	0.47	0.46	0.30	0.40	0.41

t statistics in parentheses, a, b and c indicates 1%, 5% and 10% level of significance

Table 4.11a: Gini coefficient and account use for business

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Account	**0.011[a]**	**0.011[b]**	**0.011[a]**												
Business	**(3.14)**	**(2.61)**	**(2.69)**												
Account				**0.016[a]**	**0.016[a]**	**0.016[a]**									
business-female				**(3.33)**	**(2.85)**	**(2.95)**									
Account for							**0.006[a]**	**0.006[b]**	**0.006[b]**						
business-male							**(2.65)**	**(2.24)**	**(2.30)**						
Account for										**0.009[a]**	**0.009[b]**	**0.009[a]**			
business-rural										**(2.82)**	**(2.58)**	**(2.69)**			
Account													**0.001**	**0.001**	**0.001**
Business urban													**(1.05)**	**(0.68)**	**(0.71)**
LogGNI	0.036			0.033			0.041			0.041			0.050		
	(1.23)			(1.24)			(1.32)			(1.33)			(1.64)		
GDPPKG	-0.004	-0.004	-0.004	-0.004	-0.004	-0.005	-0.003	-0.003	-0.003	-0.004	-0.004	-0.004	-0.002	-0.002	-0.002
	(-0.94)	(-1.07)	(-1.27)	(-1.19)	(-1.37)	(-1.63)	(-0.69)	(-0.79)	(-0.93)	(-1.00)	(-1.13)	(-1.26)	(-0.43)	(-0.47)	(-0.55)
Health	0.015[b]	0.014[b]	0.015[b]	0.015[b]	0.014[b]	0.014[b]	0.015[b]	0.014[b]	0.014[b]	0.014[b]	0.013[c]	0.013[b]	0.015[b]	0.012[c]	0.012[c]
expenditure	(2.37)	(2.19)	(2.34)	(2.30)	(2.08)	(2.22)	(2.26)	(2.08)	(2.20)	(2.08)	(1.87)	(1.99)	(1.99)	(1.67)	(1.75)
Log trade	0.015	0.013	0.009	0.020	0.019	0.015	0.021	0.017	0.013	0.024	0.018	0.016	0.049	0.040	0.038
	(0.24)	(0.22)	(0.15)	(0.32)	(0.33)	(0.26)	(0.32)	(0.27)	(0.21)	(0.37)	(0.30)	(0.26)	(0.68)	(0.59)	(0.55)
Inflation	0.000	0.000		0.000	0.000		0.001	0.000		0.000	0.000		0.001	0.000	
	(0.74)	(0.34)		(0.61)	(0.22)		(0.92)	(0.46)		(0.70)	(0.22)		(1.36)	(0.75)	
human		0.006	0.006		0.005	0.005		0.008	0.008		0.008	0.008		0.010[c]	0.010[c]
capital		(1.15)	(1.10)		(0.99)	(0.94)		(1.48)	(1.42)		(1.54)	(1.50)		(1.82)	(1.79)
Log Assets			-0.014			-0.012			-0.016			-0.009			-0.021
			(-0.83)			(-0.75)			(-0.87)			(-0.54)			(-1.08)
Constant	1.42[a]	1.51[a]	1.55[a]	1.42[a]	1.50[a]	1.53[a]	1.41[a]	1.51[a]	1.55[a]	1.402[a]	1.51[a]	1.53[a]	1.34[a]	1.48[a]	1.53[a]
	(11.04)	(15.07)	(11.94)	(12.09)	(15.22)	(12.37)	(10.21)	(14.49)	(11.26)	(10.28)	(14.71)	(11.45)	(9.30)	(12.92)	(10.48)
No of obs	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
R-Sq Adj	0.36	0.35	0.35	0.41	0.39	0.39	0.32	0.31	0.31	0.33	0.32	0.32	0.27	0.26	0.26

t statistics in parentheses, a, b and c indicates 1%, 5% and 10% level of significance

Table 4.12a: Gini coefficient and electronic payment (EP)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
EP	**0.005[b]**	**0.006[a]**	**0.006[a]**												
	(2.03)	**(2.83)**	**(2.77)**												
EP				**0.006[b]**	**0.007[a]**	**0.007[a]**									
female				**(2.32)**	**(3.51)**	**(3.40)**									
EP							**0.004**	**0.005[c]**	**0.005[c]**						
male							**(1.55)**	**(1.93)**	**(1.93)**						
EP										**0.005[c]**	**0.006[b]**	**0.006[b]**			
rural										**(1.79)**	**(2.57)**	**(2.50)**			
EP													**0.003**	**0.003**	**0.003**
urban													**(1.22)**	**(1.43)**	**(1.46)**
LogGNI	0.029			0.033			0.032			0.035			0.038		
	(0.93)			(1.11)			(1.04)			(1.12)			(1.21)		
GDPPKG	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002	-0.001	-0.002	-0.001	-0.001	-0.002	-0.001	-0.001	-0.002
	(-0.33)	(-0.27)	(-0.38)	(-0.27)	(-0.20)	(-0.33)	(-0.38)	(-0.35)	(-0.45)	(-0.37)	(-0.33)	(-0.44)	(-0.33)	(-0.34)	(-0.46)
Health	0.013[c]	0.011	0.011	0.013[c]	0.010	0.011	0.013[c]	0.011	0.011	0.013[c]	0.011	0.011[c]	0.012[c]	0.010	0.011
expenditure	(1.78)	(1.47)	(1.61)	(1.81)	(1.47)	(1.62)	(1.77)	(1.48)	(1.60)	(1.84)	(1.53)	(1.66)	(1.76)	(1.43)	(1.56)
Logtrade	0.031	0.008	0.004	0.031	0.007	0.003	0.034	0.012	0.009	0.031	0.005	0.002	0.041	0.025	0.020
	(0.45)	(0.13)	(0.07)	(0.46)	(0.11)	(0.05)	(0.48)	(0.20)	(0.15)	(0.43)	(0.08)	(0.04)	(0.60)	(0.41)	(0.33)
inflation	0.001	0.000		0.001	0.000		0.001	0.000		0.001	0.000		0.001	0.000	
	(0.82)	(0.29)		(0.84)	(0.24)		(0.90)	(0.38)		(0.80)	(0.18)		(1.15)	(0.60)	
human		0.009[b]	0.009[c]		0.010[b]	0.010[b]		0.009[b]	0.009[c]		0.010[b]	0.010[b]		0.009[b]	0.009[b]
capital		(2.00)	(1.92)		(2.25)	(2.15)		(1.98)	(1.90)		(2.19)	(2.12)		(2.07)	(1.96)
LogAssets			-0.013			-0.012			-0.015			-0.009			-0.021
			(-0.67)			(-0.70)			(-0.68)			(-0.48)			(-1.12)
Constant	1.442[a]	1.537[a]	1.572[a]	1.431[a]	1.537[a]	1.570[a]	1.429[a]	1.530[a]	1.569[a]	1.424[a]	1.538[a]	1.563[a]	1.400[a]	1.509[a]	1.566[a]
	(10.09)	(14.74)	(11.24)	(10.54)	(15.12)	(11.82)	(10.08)	(14.48)	(10.91)	(9.77)	(14.31)	(10.95)	(9.95)	(14.55)	(11.40)
No obs	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
R-sq Adj.	0.32	0.36	0.36	0.34	0.38	0.38	0.29	0.32	0.32	0.31	0.35	0.35	0.29	0.31	0.31

t statistics in parentheses, a, b and c indicates 1%, 5% and 10% level of significance

Table 4.13a: Gini coefficient and formal saving

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Save formal	**0.001**	**0.001**	**0.001**												
	(1.41)	**(1.33)**	**(1.39)**												
Save formal				**0.003[b]**	**0.003[c]**	**0.003[b]**									
male				**(2.13)**	**(1.92)**	**(2.05)**									
Save formal							**0.004[b]**	**0.004[b]**	**0.005[b]**						
female							**(2.31)**	**(1.95)**	**(2.07)**						
Save formal										**0.004[b]**	**0.004[b]**	**0.004[b]**			
rural										**(2.37)**	**(2.09)**	**(2.27)**			
Save formal													**0.001**	**0.001**	**0.001**
urban													**(1.34)**	**(1.24)**	**(1.31)**
LogGNI	0.048			0.027			0.018			0.026			0.041		
	(1.57)			(0.95)			(0.64)			(0.96)			(1.30)		
GDPPKG	-0.002	-0.002	-0.003	-0.003	-0.003	-0.004	-0.004	-0.005	-0.005	-0.004	-0.004	-0.005	-0.003	-0.003	-0.003
	(-0.57)	(-0.63)	(-0.74)	(-0.76)	(-0.82)	(-1.01)	(-1.22)	(-1.33)	(-1.57)	(-1.16)	(-1.27)	(-1.56)	(-0.59)	(-0.65)	(-0.77)
Health	0.016[b]	0.014[c]	0.014[b]	0.015[b]	0.013[b]	0.014[b]	0.014[c]	0.013[c]	0.013[b]	0.013[c]	0.012[c]	0.013[b]	0.015[b]	0.013[c]	0.013[c]
Expenditure	(2.26)	(1.90)	(2.00)	(2.19)	(2.04)	(2.26)	(1.94)	(1.85)	(2.02)	(1.91)	(1.78)	(2.00)	(2.07)	(1.80)	(1.91)
Logtrade	0.040	0.031	0.028	0.032	0.025	0.018	0.029	0.026	0.019	0.035	0.029	0.022	0.040	0.033	0.029
	(0.60)	(0.50)	(0.44)	(0.54)	(0.43)	(0.32)	(0.50)	(0.45)	(0.34)	(0.59)	(0.50)	(0.39)	(0.59)	(0.51)	(0.45)
inflation	0.001	0.000		0.001	0.001		0.001	0.000		0.001	0.000		0.001	0.001	
	(1.38)	(0.77)		(1.17)	(0.82)		(0.95)	(0.74)		(0.93)	(0.62)		(1.44)	(0.90)	
human		0.010[c]	0.010[c]		0.006	0.006		0.004	0.003		0.005	0.005		0.008	0.008
capita		(1.90)	(1.84)		(1.17)	(1.05)		(0.66)	(0.55)		(1.11)	(0.98)		(1.51)	(1.44)
LogAssets			-0.022			-0.029			-0.027			-0.026			-0.027
			(-1.17)			(-1.49)			(-1.39)			(-1.34)			(-1.33)
Constant	1.328[a]	1.458[a]	1.513[a]	1.424[a]	1.497[a]	1.574[a]	1.456[a]	1.504[a]	1.576[a]	1.426[a]	1.496[a]	1.566[a]	1.379[a]	1.487[a]	1.556[a]
	(9.01)	(13.14)	(10.65)	(10.83)	(14.86)	(11.73)	(10.78)	(15.08)	(11.66)	(10.80)	(14.89)	(11.58)	(9.76)	(13.82)	(11.01)
No obs	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
R-Sq Adj.	0.28	0.28	0.28	0.33	0.33	0.34	0.36	0.35	0.36	0.35	0.35	0.36	0.28	0.27	0.28

t statistics in parentheses, a, b and c indicates 1%, 5% and 10% level of significance

CHAPTER 5
EXPLORING THE RELATIONSHIP BETWEEN FINANCIAL INCLUSION AND ASSETS ACCUMULATION IN SOUTH AFRICA[18]

5.1 INTRODUCTION

Recently asset building and financial inclusion have been used as a strategic intervention to achieve multiple outcomes: consumption smoothing and capacity development of the poor through asset accumulation. This innovative approach to social policy is gaining support as scholars argue that income transfer alone is not a sufficient condition to assist the poor to escape poverty completely (Sherraden and Boshara, 2007: 3). Analysis presented in Chapter 4 revealed that financial inclusion improves welfare by reducing the headcount poverty ratio and under-five mortality rate per 1,000 live births. Elsewhere in the literature, evidence suggests that financial inclusion encourages individuals to accumulate assets (Demirgüç-Kunt and Klapper, 2012a). Based on this emerging positive evidence, there is growing concern that savings and asset building opportunities should be extended to everyone both the poor and rich for two reasons. First, from a moral point of view, everyone should have a fair chance and opportunity to develop his or her capacity to lead a stable and satisfactory life. Secondly, from a practical perspective, everyone will be better off if individuals, communities and societies accumulate assets, invest in themselves and their children, and become productive and engaged in meaningful economic activities (Sherraden and Boshara, 2007: 3). As such, individuals and families need to build savings and assets, which they can invest to improve their economic well-being over time.

As mentioned in Section 1.1, this chapter focuses the analysis on South Africa to provide more insights into the relationship between financial inclusion and asset ownership at the individual level, building from the analysis in Chapter 4. Several factors, such as an effective welfare system, a well-developed financial system and data availability makes South Africa a perfect choice to examine the connection between financial inclusion and assets ownership. Financial inclusion and assets ownership is gaining grounds in social policy circles as a strategic intervention to redress poverty and inequality through capacity development of the poor. However, this recent approach is yet to be tested in the context of South Africa. Social policy is solely transfer-based, with about 16.9 million poor individuals receiving income transfers, of whom 11.9 million are children receiving child support grants (SASSA, 2016). Meanwhile, South Africa has made significant progress towards

[18] Part of this chapter focusing on saving and insurance has submitted for peer-review at the *International Journal of Social Economics*.

improving financial access for the previously excluded and by 2014, financial inclusion of adults 15 years and older is estimated at 75% (FinScope, 2014). This indicates an active and efficient financial sector that can support asset building social welfare programmes. Chapters 3 and 4 examined the long-run relationship and association between financial depth and access versus welfare at the aggregate level. This chapter builds on Chapter 4 to extend the analysis at the individual level by exploring the relationship between individual assets ownership and financial inclusion in an attempt to understand ways in which financial inclusion can assist the poor to build assets.

Several strategies exist to accumulate assets; however, savings play a critical role. For example, in South Africa, the government assists low-income and poor households earning R3,500 per month or less to own decent houses (Rust, 2012). Other public policy initiatives include water and electricity subsidies for poor households, particularly in rural areas, solar power generation, and education subsidies through the National Student Financial Aid Scheme (NSFAS). However, these initiatives have not been targeted through the formal financial sector, underemphasising the importance of saving and asset building in economic and social development circles in South Africa. Although the poor may pay some money to gain ownership of assets, there are no incentives for the poor to accumulate assets, as it exists for the working class through the tax system. These discrepancies help propagate inequality in asset accumulation between the poor and the rich. If these institutional constraints are addressed based on the principle of equal opportunity for all, everyone should have access to public subsidies and financial services should be equitable (Sherraden and Boshara, 2007: 3). From an empirical perspective, evidence on saving and asset building is limited in South Africa with the exception of Adato et al. (2006) who explore the dynamics of assets, poverty and social exclusion in South Africa. This clearly shows a considerable knowledge gap on how financial inclusion and assets building can assist the poor and low-income families in South Africa to find a sustainable pathway out of poverty.

The main objective of this chapter is to explore the relationship between financial inclusion and asset ownership using FinScope (2014) consumer survey. The interest of the analysis is on individuals at the bottom of asset ownership. Consequently, the analysis adopt a quantile regression technique because it offers a mechanism to estimate the conditional median function and the full range of other conditional quantile functions. This gives the researcher the flexibility to examine variations in assets ownership with the level of financial inclusion (Koenker, 2000 and 2005). The findings of this chapter will have serious implications for asset building social welfare programmes for the poor and low-income families in South Africa.

The reminder of this chapter is organised as follows: Section 5.2 provides the conceptual definition of asset building. Sections 5.3 and 5.4 present the theoretical and empirical literature. Section 5.5 discusses the empirical strategy and data. Section 5.6 presents and discusses the results and Section 5.7 draws conclusions.

5.2 CONCEPTUAL DEFINITION OF ASSET BUILDING

Sherraden (1991) proposed the term *asset building* as a strategy to assist individuals at the bottom of the income pyramid to build assets. Sherraden (1991) advocates asset building for low-income families to complement the government's income transfer assistance to enable the poor to break out of poverty. He argued that government should subsidise the poor and low-income families in the same way it supports the working class to enable them to save for their children's education, down payment on a house, pension and retirement savings. Since the 1990s, the concept of assets building has expanded and now means physical or man-made capital, financial capital, human capital, social capital and natural resources capital (Moser, 2005). During a three-day symposium organised by the Global Assets Project in June 2007, asset building was consistently used to refer to efforts to build savings and productive assets, including education, home ownership, livestock, investment and pensions. Elsewhere it refers to asset accumulation, asset development and wealth building (Sherraden and Boshara, 2007: 2). For this study, asset building will refer to man-made capital such as television sets, cell phones, microwaves, fridges and many others.

By design, asset-building programmes do not offer credit to participants but are rather crafted financial incentives intended to stimulate and encourage low-income households to save. Historically, their existence and success are in developed economies because of a well-developed financial sector and an effective welfare state including, for instance, individual development accounts (IDAs) in USA, EduSave in Singapore, child trust accounts in UK and many others. The few footprints of asset building programmes in Africa include YouthSave in Ghana, account for orphans in Uganda and orphan and vulnerable children in Zimbabwe (Sherraden and Boshara, 2007; Crea et al., 2013). These programmes provide incentives to save for specific purposes by matching the saving with official or private subsidies on a 1:1 or 2:1 basis or even higher depending on the amount agreed by the programme. Savers have restricted access to the fund but can access only the amount saved and not the matched amount. At maturity, savers gained full access to the saved and matched funds and accumulated funds can be used to buy a house, fund post-secondary education or start a small business. In addition, participants can use money accumulated to buy work-related assets such as cars and laptops (OECD, 2003; Boshara, 2005).

5.3 THEORETICAL PERSPECTIVE OF FINANCIAL INCLUSION AND ASSETS BUILDING

The theory of asset based social welfare developed on the argument that income transfer alone is not a sufficient condition to enable the poor to break out of poverty. Borrowing heavily from psychology, sociology and economics, Sherraden (1991) argues that assets provide a variety of social, economic and psychological effects that income alone cannot provide. Sherraden (1991: 148) postulates that assets improve economic stability, connect people with a viable and hopeful future, stimulate development of human and other capital, enable people to focus and to specialise, provide a foundation to take risk, yield personal, social and political dividends, and enhance the welfare of offspring.

Firstly, assets cushion against economic instability such as major illness, job loss or marital breakup. When these events occur, families near the income poverty line are likely to fall into poverty. Asset accumulation protects against such economic shock by providing back-up resources to smooth consumption. Consequently, families with asset holdings are less likely to fall into deep crisis and are more likely to maintain a stable life during adverse economic periods until their economic situation is normalised. Thus, assets provide a shield against poverty because the assets are not immediately consumed but are a stock that endures and generate economic and social returns (Ford Foundation, 2004: 9).

Secondly, asset accumulations influence future orientation and ensure that people are forward-looking (Ford Foundation, 2004). Sherraden (1991: 151) argues that future orientation is a critical factor to achieve success and without positive thinking towards the future, hopes are lost, visions are not created, plans are not made, and struggles and sacrifices are not undertaken. Thus, asset accumulation influences the way people think and behave. For instance, first time homeowners will begin to pay more attention to real estate values, property tax and maintenance. Furthermore, holding of financial assets such as certificates of deposit increases financial knowledge such as factors driving changes in interest rates. The main idea here is that positive thinking about the future begins in part with assets, which in turn influence future opportunities, which in turn are quickly internalised. Sherraden (1990: 585) calls this process *social construction*. That is, the whole processes of life changes, life courses are assessed, integrated and fixed at an early age unless something out of the ordinary breaks the pattern. For example, children from poor families are more likely to drop out of school because they believe their parents may not afford the cost of college education and even if they complete high school, it will not make a difference to their life chances. Conversely, children who know their parents have saved for their college education are forward-looking and find it easier to make positive decisions and resist peer pressure. Therefore, if people

are to believe in a viable future, there must be some tangible link between now and the future and assets provide such a link (Sherraden, 1991).

Thirdly, assets can be transferred to the next generation thereby increasing the welfare of offspring. That is, life becomes less stressful when individuals inherit some level of assets and this increases life opportunities. This is entrenched in the saying that "some people stand on their own two feet, but some stand on their parents' shoulders" (Sherraden, 1991: 167). Saving theories such as Modigliani and Brumberg (1954) also emphasise the desire to leave bequests as one of the motives for asset accumulation. Asset building therefore draw the poor into the formal financial system thereby building inclusive societies while addressing market and institutional failures at the bottom of the income pyramid. Therefore, asset building addresses market distortion created by institutional structures such as public sector incentives for working class operated through the tax system. This includes mortgage subsidy, retirement annuity and health insurance. These structures completely exclude the poor from participating since they do not earn enough to pay tax and some are non-working poor. As information asymmetry at the bottom of the income pyramid increases, it reduces the ability of financial markets to serve those at the bottom of the income pyramid (OECD, 2003).

5.4 EMPIRICAL LITERATURE

Assets building social welfare programmes are growing fast in advanced economies such in the US, the UK, Canada, Korea, and Singapore but are still at the early stage in Africa. However, empirical evidence is mostly from the US (Li and Sherraden, 2010). Nevertheless, evidence from developing economies and Africa is gradually growing (see Han and Hong, 2011; Kim et al., 2010; Deng et al., 2014; Austrian and Muthengi, 2014; Chowa et al., 2010; Chowa and Masa, 2015; Curley et al., 2016; Lee et al., 2015; Ssewamala and Ismayilova, 2009).

Literature on asset building can be grouped into three: asset building and home ownership, asset building and educational enrolment, and asset building and saving attitudes among poor families. Overall, empirical evidence from these dimensions are conflicting. Findings from studies in the US that examine the effect of asset building on poor and low-income income families to own houses are mixed. Mills et al. (2008) and Engelhardt et al. (2010) found that the effect of individual development account (IDA) on homeownership is not stable. Mills et al. (2008) used a controlled experiment to examine the effect of IDA on home purchase and found no strong evidence of low-income households holding subsidised assets. Home ownership among renters increased by 7-11 percentage points but the increase was offset by a reduction in non-retirement financial assets. Grinstein-Weiss et al. (2013b) found that home ownership rose more among rented households from 1998 to 2003 in the control relative to the treatment group, although the control group caught up with the treatment group and by the end of the experiment in 2009, the economic effect of the

programme was small and insignificant on home ownership rates. Grinstein-Weiss et al. (2008) found that IDA actually helped low-income families to save towards home purchases. Their logistic regression results showed that IDA helped participants who were renters at baseline to clear old debts within 18 months (wave 2) and raise homeownership rates among renters at wave 3. Quantitatively, IDA participants who cleared their debts had a higher probability of becoming homeowners in wave 3 (32%), while non-IDA participants with no debt obligation only had a 9.6% chance of owning a house. Huang et al. (2016) examined the long-term effect of IDA on homeownership by participants with disabilities in a randomised experiment. Their findings from a 10-year follow-up indicate that rates of homeownership were almost 10 percentage points higher for the treatment group with disabilities relative to the control group with disabilities. This led them to conclude that the impacts of IDA are likely to vary depending on the baseline characteristics of the participants.

However, the effect of asset building seems to be stronger on college education and the propensity to save among low-income families. The findings from studies that examined the effect of IDA on post-secondary enrolment suggest a positive effect on college enrolment (Loke, 2013; Grinstein-Weiss et al., 2013a; Cheatham and Elliot, 2013; Huang, 2013; Zhan and Sherraden, 2011). For instance, Grinstein-Weiss et al. (2013a) found a significant impact on educational enrolment and a positive but insignificant impact on graduation from their 10-year follow-up randomised control trials experiment in the Tulsa-Oklahoma IDA project. Their results also show that IDA has a strong positive effect on educational attainment for men but not for women. Meanwhile, Loke (2013) and Chowa et al. (2013) found that college enrolment increased significantly for children born in homes with an asset base higher than zero. Nevertheless, once low-income households start to accumulate assets over time, college graduation rates for children from poor families converge at the same rate as youths from wealthier households. Zhan and Sherraden (2011) confirmed that when family income and other parent/child characteristics are controlled for, both financial and non-financial assets are associated with the increased likelihood of a child to complete college.

Moving to asset building and the effects of saving accumulation, overall evidence suggests that low-income households can save when provided with structured opportunities. Such studies include Grinstein et al. (2006), Friedline et al. (2013), McKernan et al. (2010), Huang (2010) and Birkenmaier et al. (2012). Apart from encouraging low-income household to save, the compulsory financial education attached to IDA improves financial management skills of participants and can induce a change in saving behaviour (Huang, 2010; Huang et al., 2015). Participation and completion of asset building programmes improve the credit history and scores for participants compared to non-participants (Birkenmaier et al., 2012), which increases their chances of accessing

credit markets. Furthermore, extending saving accounts at adolescence improves saving outcomes for low-income households and is likely to extend to adulthood (Friedline et al., 2013). However, the experience of a small sample of ten Hispanic and Anglo low-income families living in an impoverished neighbourhood in Cleveland suggests that environmental conditions can threaten asset accumulation and retention. That is, poor families may sell accumulated assets if they reside in an extremely poor neighbourhood, making it difficult to evaluate the potential of assets to serve as a tool for upward mobility (Finn et al., 2015).

Outside the US, qualitative evidence from the Hope Account in South Korea revealed that participation in asset building programmes changed saving behaviours, improved financial management skills, and helped old adults achieve economic security (Kim et al., 2010; Han and Hong, 2011). Furthermore, the compulsory financial education component attached to asset building helped participants to develop confidence and positive thinking and instilled hope for participants and their children. In China, Deng et al. (2014) used logistic regression analysis to compare how improvement in household assets (liquid assets and net wealth) relative to income affects the enrolment of boys and girls. Their results showed that household assets measured as liquid assets has a positive impact on the enrolment of girls but has a negligible effect on schooling of boys. Their results further suggest that improved household economic conditions in terms of family income or net worth increase parents' aspiration for their children's education regardless of gender.

In Africa, asset building has been used to address vulnerability among orphan children who have lost their parents to HIV/AIDS as well as to redress gender inequality in education attainment. Such programmes are found in Zimbabwe and Uganda. For instance, Ssewamala and Ismayilova (2009) examined the effect of a family-centred assets-based intervention (Suubi Project) that encourages orphaned caregivers to save for post-primary or vocational education in rural Uganda. Using an experimental design the authors found that matched saving encourages poor families in rural Uganda to save, suggesting that matched saving related intervention can be used to address vulnerability. Recently, Curley et al. (2016) found that child development accounts, a strategy to empower girls in Uganda, has the potential to address the past effect of gender inequalities and enable young girls to think positively about the future. Austrian and Muthengi (2014) investigated the effect of a multidimensional intervention on social, health, economic assets and the experiences of sexual harassment among vulnerable adolescent girls between 10 to 19 years residing in low-income areas in Kampala, Uganda. The authors compared the treatment group – girls who received full intervention (reproductive health counselling, financial education and savings account) and a comparison group – girls who received only a savings account. They found that girls who received

full intervention experienced improvement in health and economic assets while girls who only had a savings account increased their economic assets but were more likely to have been sexually touched and harassed by men. Crea et al. (2013) explored the effect of household asset ownership using data from poor households caring for orphans and vulnerable children in rural Manicaland, Zimbabwe, and their evidence-corroborated studies in Uganda. Household asset ownership greatly reduced social vulnerability in terms of school attendance and birth registration. Furthermore, the findings suggest that ownership of fixed and movable assets has the potential to reduce the incidence of other social vulnerability risk factors for children.

Chowa et al. (2010) conducted a review of available evidence on the effect of asset building on children's well-being such as health, education and child labour in developing countries. Although the effect of asset building and child labour is conflicting because of lack of clarity on the exact definition of child labour, overall evidence suggests a positive effect on child well-being. Furthermore, asset ownership inspired people to think positively and look forward to the future. Evidence from Ghana showed that home ownership including television contributes to higher level of forward looking (Chowa and Masa, 2015). In addition, analysis from the Ghanaian YouthSave experiment suggests that constrained low-income families can save if access and opportunities are available to them (Lee et al., 2015).

In South Africa, the focus of this study, some initiatives have been in place to assist the poor build assets as discussed in Section 5.1. However, public sector initiatives that encourage the poor to save through the formal financial system towards acquiring these assets have received less attention. The only exception is the *fundisa* matched savings account that allows low-income parents earning less than R180, 000 per annum to save for tertiary education for their children led by the private sector[19] (Standard Bank, no date). Unfortunately, no empirical evidence exists at the time of writing.

Overall, evidence suggests that asset building programmes are suitable complementary strategies to the income transfer approach to poverty reduction. However, this strategy is yet to be tested formally by the South African government. With a vibrant financial sector and a functioning social welfare system, an asset building social welfare programme is likely to be a good complement to the current income transfer approach to enable the poor to build assets and escape poverty.

[19] Standard Bank, ABSA, First National Bank and Nedbank.

5.5 EMPIRICAL STRATEGY AND DATA

5.5.1 Asset index

The asset index was derived using multiple correspondence analysis (MCA) from a list of individual asset indicators. MCA is an extension of correspondence analysis used to study the relationship between several categorical dependent variables. Thus, MCA is used to analyse qualitative variables and can be viewed as a generalisation of principal component analysis when the variables are categorical in nature but with the χ^2- metric applied on row/column profiles instead of the usual Euclidean metric (Abdi and Valentin, 2007: 1; Asselin, 2002: 2). MCA is obtained using standard correspondence analysis on an indicator matrix whose entries are coded as 0 or 1, and the MCA extracts the first factorial axis which retains the maximum information contain in the matrix. According to Asselin (2002: 14), first the profile[20] of the households relative to the indicators is computed. Secondly, the household profiles are applied to the category-weights given by the normalised scores of indicators on the first factorial axis coming from the MCA of the indicators. Then the composite assets indicator for individual is computed as the sum of each of the unit's weighted responses as follows:

$$MCA_i = \frac{\sum_{K=1}^{K}\sum_{j_K=1}^{J_K} W_{j_K}^{K} I_{j_K}^{K}}{K}, \qquad \ldots(5.1)$$

where K is the number of categorical indicators, J_K is the number of categories of indicator K, $W_{j_K}^{K}$ represents the weights (normalised first axis score) of category j_k and $I_{j_K}^{K}$ is the binary variable (0/1) which takes the value 1 if household has category j_k. One limitation of the MCA composite indicator is the tendency to have negative values at the lower end of the assets index, which makes interpretation difficult. Asselin (2002: 25) suggested an adjustment using the absolute value of the average C_{min} of the minimal categorical weight W_{min}^{K} to translate the index into positive values. The average C_{min} is defined as:

[20] The primary data matrix is a 0-1 matrix and given K indicators, the profile of households is given as a line vector of number (1/K). The value of the composite indicator is simply the average of its category-weights for each household. With N households, the profile of a category (K,J_k) is a column vector of numbers $\frac{1}{N_{j_k}^{k}}$ where $N_{j_k}^{k}$ is the number of household in the category (K, j_k), $j_k = 1, J_k$. The category-weights are the average of the normalised scores of the household belonging to this category (Asselin, 2002: 15).

$$C_{\min} = \frac{\sum_{K=1}^{K} W_{\min}^{K}}{K} \quad \ldots(5.2)$$

That is, the absolute value of this average is added to each individual assets score to derive a new composite indicator. For this study, the composite indicator was computed using 22 indicators of individual asset ownership including cell phones, televisions, fridges and many others. Studies that have used an assets index to proxy well-being include Filmer and Pritchett (2001), Booysen et al. (2008), Asselin (2002) and McKenzie (2005). Several advantages exist for using assets indices as an alternative measure for well-being. Firstly, it is easy for individuals to answer questions on asset ownership compared to recalling the amount of money spent some weeks ago on every item. Secondly, information on individuals' asset ownership is not subject to seasonality as income. For example, incomes of people working in the informal and agricultural sectors are highly variable and affected by economic outlook (Wietzke, 2015). However, a major limitation of assets indices is that they may not be broad enough to cover a wide range of indicators to permit differentiation in standard of living (McKenzie, 2005: 235).

5.5.2 Analytical framework

The goal of this chapter is to examine the relationship between financial inclusion and individual physical asset ownership. We are interested in the changes in the relationship along the conditional assets distribution function, hence quantile regression methods are used. Quantile regressions have been used in many settings such as in paediatric medicine to study the growth curve for children's height and weight and are widely used in economics to study determinants of wages, discrimination effects and trends in income inequality (Koenker, 2000: 1).

Notation framework

Consider the effect of a binary treatment variable D on a continuous variable Y and let Y_i^1 and Y_i^0 be the potential outcomes of individual *i*. The outcome Y_i^1 will be realised if individual *i* receives treatment 1, and Y_i^0 would be realised other. The observed outcome Y_i is stated as:

$$Y_i \equiv Y_i^1 D_i + Y_i^0 (1 - D_i) \quad \ldots(5.3)$$

Very often the outcome variable, Y, the treatment, D, and also some covariates, X, are observed. The quantile treatment effect (QTEs) can either be defined conditioned on a set of covariates or unconditionally. For this study, the QTEs are conditioned on a set of observed covariates, thus we start with the standard linear quantile model and assume selection on observables. Two assumptions are required.

We assume that Y is a linear function in X and D, such that the potential outcome model is given as:

$$Y_i^d = X_i \beta^\tau + d\delta^\tau + \varepsilon_i \text{ and } Q_{\varepsilon_i}^\tau = 0 \quad \ldots(5.4)$$

For i = 1, ..., n and d $\in$ (0, 1). $Q_{\varepsilon_i}^\tau$ refers to the τ th quantile of the unobservable random variable ε_i. β^τ and δ^τ are the unknown parameters of the model. Thus, δ^τ represents the QTEs at quantile τ. However, the linearity assumption may not be sufficient to identify the QTEs because the observed D_i may be correlated with the error term, and so a second assumption is required.

Secondly, we assume selection on observables with exogenous covariates, X (Frölich and Melly, 2010: 425-426).

$$\varepsilon \perp\!\!\!\perp (D, X)$$

This is the conditional independence assumption (CIA) which implies that treatment status is random conditioned on a set of control covariates, X. That is, after controlling for possible observables both treatment and non-treatment groups are the same in their remaining characteristics, apart from the fact that some individuals have access to financial service (treated) and others do not have access. This is a very strong assumption and requires a sufficiently large number of control variables (StataCorp, 2013: 153). Luckily enough the FinScope 2014 consumer survey provides a rich set of individual demographic characteristics as well as other socio-economic factors that will constitute the set of control variables.

Thus, the linearity and the selection of observable assumptions imply that $Q_{Y|X,D}^\tau = X\beta^\tau + D\delta^\tau$, such that the unknown parameters of the potential outcome equation can be recovered from the joint distribution of the observed variables Y, X and D. These unknown coefficients can by estimated using the classical quantile regression proposed by Koenker and Basset (1978) and defined as:

$$(\hat{\beta}^\tau, \hat{\delta}^\tau) = \underset{\beta,\delta}{\arg\min} \sum \rho_\tau (Y_i - X_i \beta - D_i \delta) \quad \ldots(5.5)$$

where $\rho_\tau(\mu) = \mu$ x $\{\tau - 1(\mu < 0)\}$ is called the check function. Equation 5.3 is a convex linear programming problem solved using the built-in stata command qreg (Frölich and Melly, 2010: 425-426). However, we employ Machado et al.'s (2011) wrapper qreg2 for qreg that estimates quantile regression and reports standard errors and t-statistics that are asymptotically valid under heteroskedasticity and misspecification (see Machado and Santos Silva, 2013 for details). The empirical model is specified as:

$$Q_\tau(Y_i) = \beta_0^\tau + \beta_1^\tau FI + \beta_2^\tau CV + \varepsilon_i^\tau \quad \ldots(5.6)$$

where $Q_\tau(Y_i)$ is the assets index, β_0 is the intercept at specific quantiles, FI captures three binary aspects of financial inclusion taking the value 1 if individuals use financial services (borrowing, saving and insurance) and 0 if individuals do not use financial services. β^τ are the unknown coefficients to be estimated at each point on the conditional distribution, CV represents a set of exogenous control variables which include individual demographic characteristics as well as socio-economic factors that are likely to affect asset ownership (see Table 5.1 for details) and ε_i is the error term.

Within this modelling framework, financial inclusion may be endogenously determined by covariates within the system. For instance, households that live near a financial services outlet are likely to access and use financial services. Furthermore, there is the likelihood of selection bias in the use of financial services, as assignment into treatment and control groups are not randomised and thus the two groups may differ. This is a common occurrence in observational studies, as the researcher has no control in the assignment of individuals into treatment and control groups. This problem can be addressed using the IV approach but the difficulties of getting a suitable instrument within the data makes it infeasible to pursue this approach. Thus, the results should be interpreted with some caution.

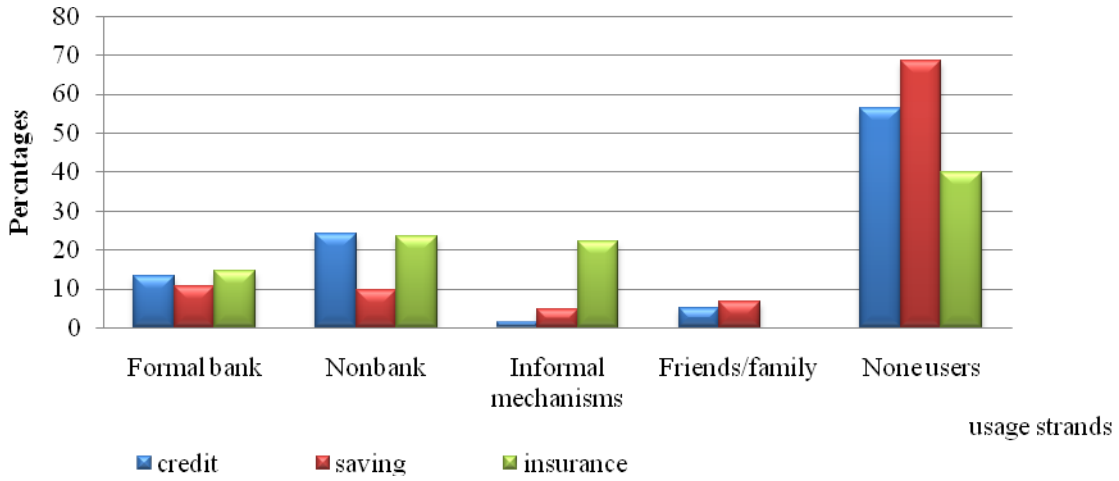
5.5.3 Data

The study used the FinScope 2014 consumer survey for South Africa that measures perception concerning access to and usage of formal and informal financial services across income groups and other demographic regions. The FinScope survey is a national representative and independent cross-sectional survey, which has been conducted annually in South Africa since 2002. FinScope adopt a stratified multi-stage sampling and conduct face-to-face interviews with individuals who are 16 years and above from their homes. A total of 3,900 individuals were interviewed during the 2014 survey, of whom 57% were female, 43% male, 76% living in urban areas, 5% on farms, 19% in rural areas, 61% blacks, 16% coloured, 6% Asian and 17% white.

Following FinScope (2014: 70) the study defines financial inclusion as “those who have access, use products from formal and informal financial sectors” and financially excluded as “those without access and do not use financial products from formal or informal sectors”. Financially excluded individuals borrow from friends/family and save at home if they want to save. In the survey questionnaire, individuals were asked if they have borrowed and saved in the past 12 months, from/at formal and informal sources such as friends and family, retail stores, stokvels and

pawnshops, and whether they keep money at home. Other questions seek to know whether individuals are insured by formal or informal financial sector such as burial societies. The responses to all these questions are categorical and binary, for example: "looking at this list of statements, please tell me which of these are true for you?" All the responses from the various forms of borrowing, saving and insurance are summarised by FinScope and reported as Q6004_ (credit strand), Q6027_ (saving strand) and Q6014_ (insurance strand). Each strand has information on individuals who use financial products and services from formal banking, non-bank, informal mechanism, friends and family and those do who not use financial services. From earlier discussions, individuals who use financial services from banks, non-banks and informal mechanism are coded as "1" (users/treatment group) and those do not borrow or save, borrow from friends/family and keep money at home are coded as "0" (non-users/control group). Figure 5.1 summarises the financial inclusion strands.

Figure 5.1: FinScope 2014 financial inclusion strands for South Africa

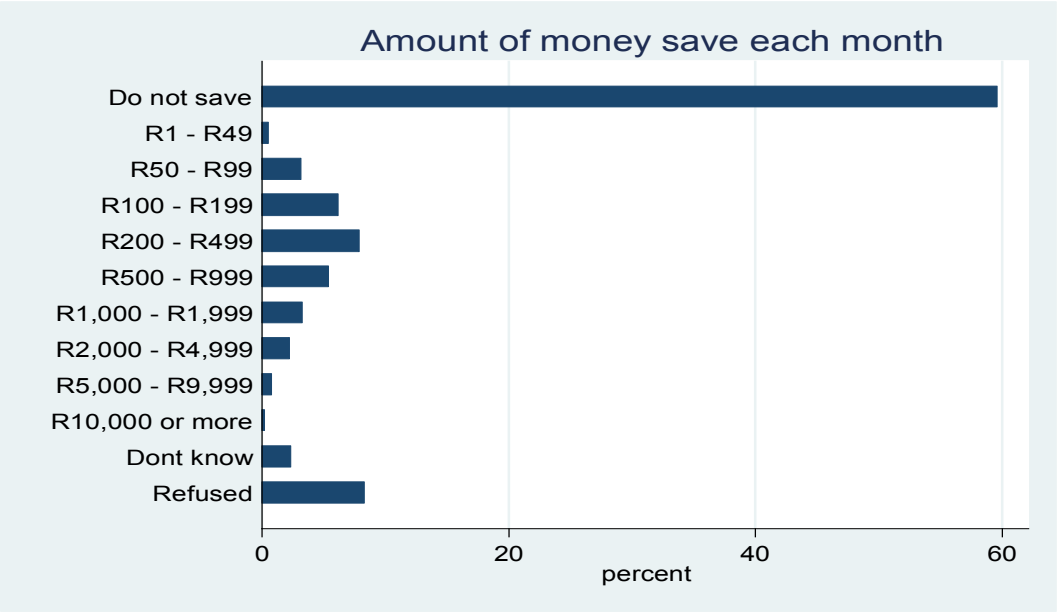


Source: FinScope 2014 consumer survey

Question 160_ asks how much each individual saves per month[21]. Figure 5.2 illustrates this information and shows that about 60% of the respondents reported not saving any money each month. The proportion of people who save at least R1 per month is just 0.56% and this proportion increases gradually to a maximum of 7.9% and declines steadily to 0.21% for those who save at least R10,000 per month.

[21] Individual monthly saving includes all the money paid to stokvels, saving clubs, investments and retirement products.

Figure 5.2: Individual saving per month in South Africa



Source: FinScope 2014 consumer survey

Finally, Table 5.1 shows all the control variables and how there were recoded for the analysis.

Table 5.1a: Variable description and coding

Variables	Description
Household level	
Total household size	Total number of people residing in a household
Household size	Total number of people age 15+ residing in a household
Race (4 categories)	1 = black, 2 = coloured, 3 = Indians and 4 = white
Gender	1 = female and 0 = male
Married	1 = married and single not married but living with partner, 0 = others
Single	1 = single not married and not living with partner, 0 = others
Others	1 = widow, separated, divorced and not specified, 0 = others
Primary	1 = primary or less education, 0 = others
High school	1 = some high school education, 0 = others
Matric	1 = completed matric education, 0 = others
Post-matric	1 = completed post-matric education, 0 = others
Age	Natural log of household age
Age squared	Natural log of household age squared
Geographic area	1 = metro area, 0 = rural area
Full employment	1 = >30 hours work per week for self, individual and company, 0 = others
Part time	1 = <30 hours work per week for self, individual and company, 0 = others
Voluntary employed	1 = students, housewife/house husbands, 0 = others
Unemployed	1 = active looking and discouraged job seekers, 0 = others
Low income	1 = R1- R7,999 household monthly income, 0 = others

Variables	Description
Middle income	1 = R8,000 - R24,999 household monthly income, 0 = others
High income	1 => R25,000 household monthly income, 0 = others
Refuse	1 = refuse to declare income/uncertain, 0 = others
Distance to ATM	1 =< 30 minutes' walk from home to nearest ATM, 0 => 30 minutes
Distance to bank branch	1 =< 30 minutes' walk from home to nearest bank branch, 0 => 30 minutes
Financial Inclusion	
Credit	1 = credit from banks, nonbank and informal financial sector, 0 = credit from friends/family and not borrowing
Saving	1 = save at banks, nonbank and informally, 0 = keep money at home and no saving at all
Monthly saving	1 = save some money each month, 0 = no saving each month
Insurance	1 = insured by banks, nonbanks, other informal and burial society, 0 = no insurance
Assets index	Composite index derived from a list of household asset indicators using MCA

By authors

Source: FinScope 2014 consumer survey for South Africa

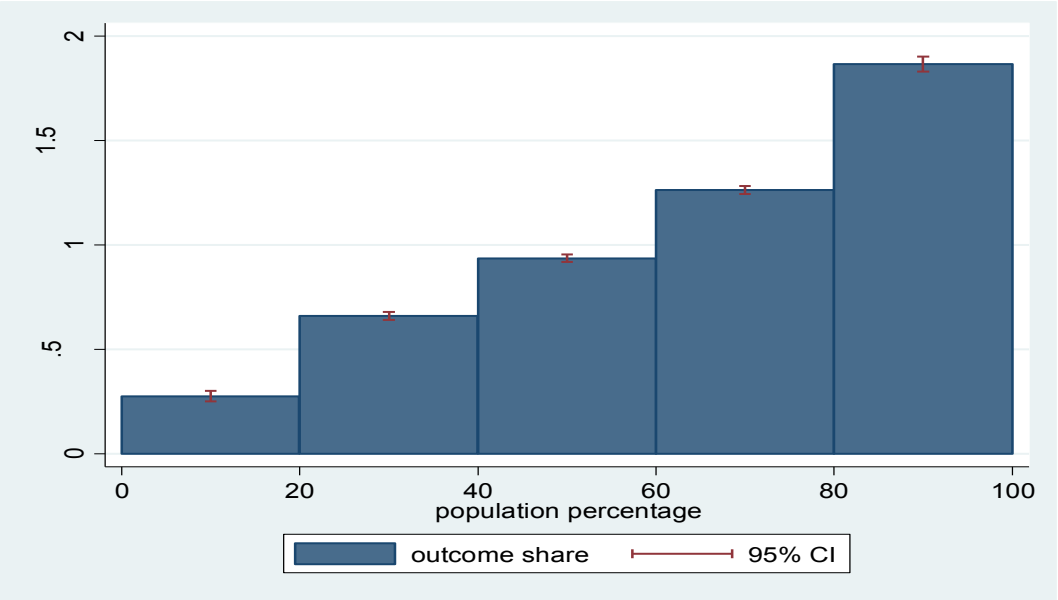
Theory and related studies in this area, such as Chowa et al. (2013) and Chowa and Massa (2015), guide the choice of the control variables recoded in Table 5.1a. For example, married couples are more likely to accumulate assets over time by pooling resources together compared to singles. Theory further suggests that differences in individual assets ownership can be attributed to age, income, household size and education level. Table 5.1b at the end of the chapter provides summary statistics of these control variables.

5.6 RESULTS

Descriptive analysis

We start the discussion with some descriptive statistics about the composite assets index derived using MCA. First, the percentile share density of assets distribution is shown using a histogram. Percentile density shows the amount of assets that each member in a group owns on average relative to the overall average (Jann, 2016: 25).

Figure 5.3: The percentile share densities of asset distribution



Source: By authors composite assets index

Figure 5.3 above shows the average asset ownership of the bottom 20% is about 27% of the overall average, whereas individuals in the top richest 20% own assets that are about 7 times the average assets. However, within the 20%- 40%, 40%- 60% and 60%-80%, the gap in asset ownership is almost equal and is about 1.4 times on average between the groups.

Regression results

We estimated the relationship between financial inclusion and asset ownership using OLS and quantile regression. Following Huang et al. (2015), we control for individuals socio-economic and demographic characteristics such as marital status, gender, race, level of education, age, employment, geographic area, income status, household dependents and family size. Summary results are reported in Table 5.2 and Tables 5.4 – 5.7 at the end of the chapter report full results.

Table 5.2: Summary results of OLS and quantile regression

	OLS	Q(0.10)	Q(0.20)	Q(0.30)	Q(0.40)	Q(0.50)	Q(0.60)	Q(0.70)	Q(0.80)	Q(0.90)
Credit (1/0)	0.18***	0.21***	0.16***	0.17***	0.14***	0.12***	0.17***	0.18***	0.19***	0.17***
	(6.85)	(4.87)	(4.53)	(5.06)	(4.38)	(4.03)	(5.50)	(5.10)	(4.99)	(4.66)
Save (1/0)	0.12***	0.16***	0.11**	0.13***	0.11***	0.09***	0.10***	0.09***	0.10**	0.12***
	(3.89)	(3.19)	(2.36)	(3.09)	(2.87)	(2.66)	(2.78)	(2.60)	(2.55)	(2.95)
Monthly	0.18***	0.20***	0.15***	0.17***	0.11***	0.13***	0.18***	0.21***	0.23***	0.17***
Saving (1/0)	(6.33)	(4.21)	(3.45)	(4.83)	(3.23)	(3.73)	(5.43)	(5.57)	(6.25)	(4.31)
Insurance	0.16***	0.20***	0.13***	0.19***	0.16***	0.10***	0.13***	0.16***	0.19***	0.20***
(1/0)	(6.29)	(4.60)	(2.98)	(6.33)	(5.15)	(3.42)	(3.88)	(4.84)	(5.86)	(5.11)

Notes: *t* statistics in parenthesis

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

Source: By authors

Table 5.2 shows the summary results from OLS and quantile regression for the four aspects of financial inclusion analysed (credit, saving, monthly saving and insurance) with assets index as the dependent variable. The first column reports mean estimate from OLS and shows that financial inclusion (credit, general saving, monthly saving and insurance) has a positive relationship with asset ownership. These results are statistically significant at least at the 1% level. Holding all other factors constant, a one unit increase in access to credit is associated with a mean increase of 0.18 units for individuals who borrow (formal and informal) compared to non-borrowers. A similar interpretation applies for the other aspects of financial inclusion.

Quantile regression results

Quantile regressions measure the change in a specified quantile of the dependent variable produced by a one unit change in the independent variable of interest. The interests in this analysis are those at the lower end of asset distribution and nine quantiles are estimated. Starting with credit and moving from the lower to upper quantile, the results indicate that financial inclusion has a positive relationship with asset ownership. The relationship is statistically significant at least at the 1% level and the magnitude of the estimated betas vary across all the deciles. Holding other factors constant, a one unit increase in access to credit can increase asset ownership by 21% at the 10^{th} quantile, 16% at the 20^{th} quantile, 12% at the 50^{th} quantile and 17% at the 60^{th} quantile of the conditional assets distribution for borrowers compared to non-borrowers. The response by individuals at the lower quantiles of the conditional assets distribution (10^{th} to 30^{th}) to a one unit increase in credit access on

asset ownership is higher than individuals at the 40th and median 50th quantiles. This is likely because those at the lower quantiles lack the means to acquire these basic assets and thus derive much benefit from any marginal increases in access to credit. Meanwhile, the low response by individuals at the 40th, median and 50th quantiles likely reflect the fact that they have acquired these basic assets. Hence, an increment in credit access does not add any incentive to acquire more of the same basic assets but such an increase in credit access may not be enough to acquire more luxury assets. Finally, the response of individuals at the upper quantiles (60th to 90th) is higher relative to those at the median because their basic assets needs have been met and the focus is shifting towards luxury wants. Consequently, a one unit increase in access to credit will increase the desire to acquire more luxury assets given their position on the conditional asset distribution.

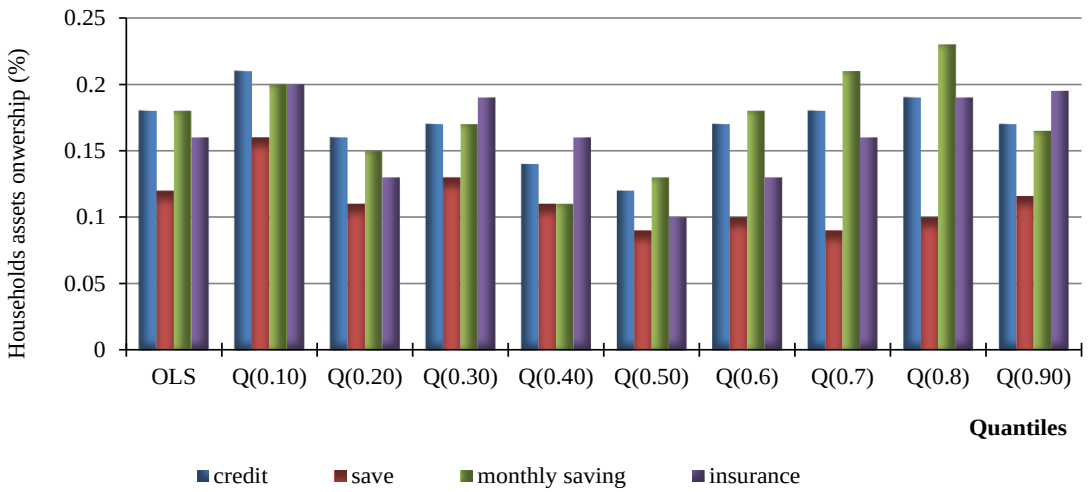
A second measure of financial inclusion analysed is saving at banks, nonbanks and informal saving per month. As the analysis revealed, a one unit increase in monthly saving can increase asset ownership by 20% at the 10th quantile, 15% at the 20th quantile, 13% at the median quantile and 18% at the 60th quantile of the conditional asset distribution for savers compared to non-savers, holding all other factors constant. Again, the response by individuals at the lower quantile to an increment in monthly saving is higher probably because of the erratic nature of the income flow of this segment of the population compared to those with stable and reliable income sources. Hence, any opportunity to accumulate this lumpy savings per month can have a substantial positive effect on asset ownership particularly at the 10th quantile of the conditional asset distribution.

The last aspect of financial inclusion analysed is insurance. The results again revealed that insurance and asset ownership are positively related. Just as the first two aspects analysed, the magnitude of the change in asset ownership is higher at the lower tail (10th, 20th and 30th quantiles) compared to the change at the median. This result demonstrates the importance of insurance to improve welfare thus supporting the results described in Chapter 4. As one moves from the lower quantile (10th) through to the upper quantile (90th), great heterogeneity exists in the change in asset ownership for all the aspects of financial inclusion analysed. This heterogeneity in the estimated slope coefficients reported for monthly saving and insurance has implications for asset building social policy. Specifically, the high magnitude of the relationship at the lower end of assets distribution suggests that marginal increases in financial inclusion can have a substantial effect on asset ownership at the lower tail. Consequently, asset building social welfare will be a viable strategy to complement the income transfer. Overall, this supports Adato et al.'s (2006) positive relationship between assets dynamic and poverty traps in South Africa. The authors identified dynamic assets thresholds in their analysis, which suggested to them that a large number of South Africans are trapped without a pathway out of poverty. The implications of the results of this study

are that well-designed incentives that encourage the poor to save, such as matched saving associated with *asset building social policy*, will have a long-term effect at the lower end of assets distribution. Encouraging the poor to save for post-secondary education and establishing asset building programmes such as individual development accounts and child development or child account at birth will give hope to the 11.9 million children currently receiving child support grants. It is likely that a greater proportion of them may face challenges financing post-secondary education and this can re-enforce intergenerational persistence of poverty and inequality. As a partial solution, the study recommends *progressive asset building social welfare programmes* as a complementary strategy to income transfer. That is, whilst assisting the poor and low-income families to smooth consumption, they should be incentivised through matched saving to save for post-secondary education of their children, purchase a house and start a small business using *child account at birth / development account and individual development account.*

Assisting the poor to save for specific purposes such as starting a business, post-secondary education and buying a home has long-term implications to reducing the incidence of poverty and income inequality. Although empirical evidence on financial inclusion and asset ownership is still developing, available evidence from IDAs in the US shows that IDAs have a positive impact on education enrolment (Grinstein-Weiss et al., 2013a). In addition, evidence from Ghanaian YouthSave showed that household asset possession has a positive effect on youth academic achievement (Chowa et al., 2013). Figure 5.4 shows a visual plot of dynamics across the quantiles.

Figure 5.4: Visual plot of OLS and quantile regression results



Source: By authors from mean and quantile estimation

The first block of Figure 5., reports mean estimates while the second to ninth blocks report estimation from the quantile regression for credit, saving, monthly saving and insurance. Monthly saving, credit and insurance display a *u-shape relationship* from the 30th to 80th quantile.

Among the control variables used in the analysis, the level of income, education, geographic location and access as measured by distance to the nearest ATM or bank branch are important factors influencing individual asset ownership. For example, lower income has a negative relationship with individual asset ownership for the mean and across all the quantile regressions, whereas middle and high income have a positive relationship. Furthermore, primary or less and some high school education has a negative relationship with individual asset ownership whereas post-matric education is positively related to asset ownership. Thus, education and income are interrelated in that the level of education plays a vital role in determining at what price individuals will sell their skills in the labour market. This reiterates the importance of encouraging the poor and low-income families to save for post-secondary education of their children.

5.7 CONCLUSION

This chapter examined the relationship between financial inclusion and individual asset ownership in South Africa. Financial inclusion was captured by access to credit, saving, monthly saving and insurance, whereas a composite assets index derived using MCA from indicators of individual asset possession was used to measure individual asset ownership. The intention was to test the feasibility of asset building social welfare for South Africa using the FinScope 2014 using OLS and quantile regressions. Hence, the focus was on the change in individual asset ownership at the lower tail of the assets distribution.

Overall, empirical analysis from mean estimator and quantile regression showed that the relationship between financial inclusion and asset ownership is positive and statistically significant at 1% level of significance across the entire assets distribution for all the measures of financial inclusion. This suggests that everyone, both poor and rich, can benefit from financial inclusion and asset building programmes. However, across the distribution, the change in asset ownership varies: higher at the lower tail (10th) quantile, lower at the median (50th) quantile and higher at the upper tail from the 60th quantile. As such, the poor and low-income families, some of whom may be first time users of the formal financial sector, may derive more satisfaction than frequent users such as the working class. This evidence provides a good case for *progressive asset building social welfare* programmes for the poor and low-income families in South Africa. With 11.9 million children currently receiving child support grants, the puzzle is whether income transfer alone can assist these children to break out of poverty.

The implications of this study are that social welfare in South Africa needs to extend beyond transfer and invest in capacity development of the poor. *Asset building social policy* that combines income transfer and asset building such as *child development/saving accounts* will help to provide a sustainable pathway out of poverty. This draws support from the empirical literature, which shows that financial inclusion, particularly savings, has a positive effect on welfare and economic outcomes (Burgess and Pande, 2005; Aportela, 1999; Bruhn and Love, 2013; Chiapa et al., 2015). Klapper et al. (2016) argued that achieving better education depends on the ability of individuals to invest in learning opportunities. Thus, given the direct link between economic growth and human capital, underinvestment in human capital undermines economic development.

Table 5.1b: Summary statistics of control variables

VARIABLES	(1) N	(2) Mean	(3) SD	(4) Min	(5) Max
Total household size	2,703	3.782	2.223	1	13
Household size age 15 and older	2,703	2.701	1.447	1	12
Gender	2,703	0.597	0.490	0	1
Distance to the nearest bank branch from home	2,703	0.507	0.500	0	1
Distance to the nearest ATM from home	2,703	0.609	0.488	0	1
Geographical area	2,703	0.337	0.473	0	1
Employed	2,703	0.452	0.498	0	1
Full employed	2,703	0.326	0.469	0	1
Part time employed	2,703	0.126	0.332	0	1
Unemployed	2,703	0.267	0.442	0	1
Log age	2,703	1.551	0.181	1.204	1.996
Log age squared	2,703	2.440	0.564	1.450	3.983
Low income	2,703	0.566	0.496	0	1
Middle income	2,703	0.181	0.385	0	1
High income	2,703	0.068	0.253	0	1
Refused to answer	2,703	0.037	0.190	0	1
Black	2,703	0.658	0.475	0	1
Coloured	2,703	0.171	0.377	0	1
Asian	2,703	0.048	0.216	0	1
White	2,703	0.122	0.328	0	1
Married	2,703	0.393	0.488	0	1
Single	2,703	0.479	0.500	0	1
Primary or less education	2,703	0.133	0.339	0	1
High school education	2,703	0.425	0.494	0	1
Post matric education	2,703	0.115	0.319	0	1

Table 5.3: List of household assets indicators used for the composite index

Indicators	Obs	Mean	SD	Min	Max
Tap water in house or on property	3900	1.128	0.334	1	2
Hot water from geyser	3900	1.536	0.499	1	2
Flush toilet inside or outside	3900	1.240	0.427	1	2
Built-in kitchen sink	3900	1.404	0.491	1	2
Ordinary Telkom telephone	3900	1.895	0.307	1	2
3 or more cell phones	3900	1.567	0.496	1	2
More than 1 radio	3900	1.745	0.436	1	2
TV set	3900	1.095	0.293	1	2
Pay TV (m-net or top TV)	3900	1.581	0.494	1	2
Air conditioner (not just a fan)	3900	1.921	0.271	1	2
Any kind of DVD player	3900	1.357	0.479	1	2
Home theatre	3900	1.584	0.493	1	2
Personal computer	3900	1.775	0.417	1	2
Fridge	3900	1.127	0.333	1	2
Deep freezer	3900	1.676	0.468	1	2
Electric stove	3900	1.099	0.299	1	2
Microwave	3900	1.300	0.458	1	2
Floor Polisher or vacuum cleaner	3900	1.746	0.435	1	2
Washing machine	3900	1.508	0.500	1	2
Tumble dryer	3900	1.860	0.347	1	2
Dishwashing machine	3900	1.938	0.242	1	2
Motor car	3900	1.640	0.480	1	2

Source: FinScope 2014 consumer survey

Table 5.4: OLS and quantile regression for borrowing

	OLS	Q(0.10)	Q(0.20)	Q(0.30)	Q(0.40)	Q(0.50)	Q(0.6)	Q(0.7)	Q(0.8)	Q(0.90)
Credit (1/0)	0.18***	0.21***	0.16***	0.17***	0.14***	0.12***	0.17***	0.18***	0.19***	0.17***
	(6.85)	(4.87)	(4.53)	(5.06)	(4.38)	(4.03)	(5.50)	(5.10)	(4.99)	(4.66)
Total household size	-0.02**	0.00	-0.01	-0.02	-0.03**	-0.01	-0.03**	-0.03***	-0.03**	-0.03**
	(-2.04)	(0.16)	(-0.60)	(-1.48)	(-2.35)	(-1.28)	(-2.38)	(-2.75)	(-2.37)	(-2.02)
Household size age	0.06***	0.04	0.05*	0.07***	0.07***	0.05**	0.07***	0.07***	0.08***	0.06***
15 plus	(4.10)	(1.66)	(2.07)	(3.56)	(4.05)	(2.72)	(3.89)	(4.47)	(4.37)	(3.01)
Full employment	0.15***	0.03	0.08	0.09	0.11	0.21***	0.18***	0.17**	0.16**	0.09
(1/0)	(2.83)	(0.30)	(1.03)	(1.32)	(1.49)	(3.70)	(2.92)	(2.42)	(2.37)	(1.16)
Part time employment	0.02	-0.16	-0.07	-0.05	0.01	0.09	0.08	0.05	0.05	0.00
(1/0)	(0.41)	(-1.45)	(-0.77)	(-0.62)	(0.13)	(1.44)	(1.09)	(0.62)	(0.60)	(0.01)
Voluntary unemployed	0.27***	0.18	0.23***	0.19***	0.21***	0.30***	0.30***	0.27***	0.31***	0.17**
(1/0)	(4.80)	(1.46)	(2.80)	(2.73)	(3.17)	(5.08)	(4.30)	(3.72)	(4.15)	(2.01)
Unemployed (1/0)	0.01	-0.03	0.03	-0.00	-0.00	0.09*	0.04	-0.01	-0.04	-0.13
	(0.20)	(-0.30)	(0.41)	(-0.02)	(-0.02)	(1.67)	(0.70)	(-0.17)	(-0.54)	(-1.55)
Logage	-5.38***	-2.24	-4.80***	-4.18**	-4.81**	-7.95***	-6.98***	-5.65***	-5.60***	-6.92***
	(-3.91)	(-0.88)	(-2.81)	(-2.24)	(-2.42)	(-4.94)	(-4.27)	(-3.15)	(-2.99)	(-3.07)
Logage squared	1.87***	0.84	1.71***	1.47**	1.67**	2.72***	2.39***	1.93***	1.96***	2.29***
	(4.19)	(0.99)	(3.07)	(2.40)	(2.54)	(5.20)	(4.56)	(3.32)	(3.31)	(3.21)
Low income (1/0)	-0.33***	-0.23***	-0.25***	-0.22***	-0.25***	-0.26***	-0.29***	-0.37***	-0.39***	-0.56***
	(-8.65)	(-3.53)	(-4.88)	(-4.39)	(-5.49)	(-5.78)	(-6.10)	(-6.55)	(-6.46)	(-7.83)
Middle income (1/0)	0.21***	0.27***	0.36***	0.33***	0.33***	0.29***	0.27***	0.18***	0.16**	-0.01
	(4.61)	(3.47)	(5.00)	(5.44)	(5.69)	(4.96)	(4.49)	(3.17)	(2.28)	(-0.10)
High income (1/0)	0.52***	0.70***	0.72***	0.68***	0.65***	0.60***	0.53***	0.45***	0.35***	0.28***
	(8.67)	(4.39)	(7.73)	(7.50)	(7.87)	(7.94)	(7.14)	(6.66)	(4.16)	(2.99)
Married (1/0)	-0.02	-0.02	0.01	0.02	0.04	0.04	0.01	-0.06	-0.05	-0.05
	(-0.64)	(-0.36)	(0.16)	(0.32)	(0.75)	(0.79)	(0.16)	(-1.16)	(-1.11)	(-0.65)
Single (1/0)	-0.02	-0.05	-0.02	-0.01	0.01	0.02	0.01	-0.06	-0.02	-0.03
	(-0.39)	(-0.67)	(-0.38)	(-0.23)	(0.19)	(0.45)	(0.16)	(-0.93)	(-0.31)	(-0.41)
Black (1/0)	-0.66***	-0.73***	-0.74***	-0.76***	-0.67***	-0.65***	-0.61***	-0.57***	-0.54***	-0.42***
	(-13.08)	(-6.19)	(-10.86)	(-13.63)	(-12.27)	(-12.40)	(-10.97)	(-9.50)	(-8.26)	(-4.56)
White (1/0)	0.10*	0.03	0.03	0.04	0.08	0.10	0.12*	0.12*	0.16**	0.22**
	(1.78)	(0.20)	(0.38)	(0.56)	(1.37)	(1.63)	(1.91)	(1.88)	(2.11)	(2.17)
Coloured (1/0)	-0.33***	-0.38**	-0.33***	-0.39***	-0.32***	-0.31***	-0.30***	-0.28***	-0.28***	-0.16*
	(-6.20)	(-2.93)	(-4.68)	(-6.65)	(-6.00)	(-5.73)	(-5.01)	(-4.40)	(-3.77)	(-1.71)

	OLS	Q(0.10)	Q(0.20)	Q(0.30)	Q(0.40)	Q(0.50)	Q(0.6)	Q(0.7)	Q(0.8)	Q(0.90)
Post matric (1/0)	0.26***	0.28***	0.25***	0.20***	0.26***	0.27***	0.27***	0.27***	0.26***	0.34***
	(6.57)	(3.09)	(5.47)	(3.57)	(4.87)	(5.44)	(5.57)	(5.74)	(4.29)	(5.18)
Distance to nearest	0.28***	0.39***	0.33***	0.28***	0.27***	0.26***	0.28***	0.27***	0.31***	0.29***
ATM from home (1/0)	(7.77)	(6.76)	(7.10)	(5.92)	(5.44)	(5.49)	(6.13)	(4.97)	(5.36)	(5.77)
Distance to nearest	0.11***	0.06	0.09*	0.09**	0.13***	0.14***	0.13***	0.12***	0.06	0.04
Bank branch (1/0)	(3.10)	(0.91)	(1.90)	(2.21)	(2.76)	(3.10)	(2.91)	(2.63)	(1.13)	(0.85)
Gender (1/0)	0.04	0.02	0.04	0.06*	0.06*	0.04	0.03	0.03	-0.00	0.05
	(1.46)	(0.47)	(1.22)	(1.75)	(1.94)	(1.36)	(1.05)	(0.95)	(-0.04)	(1.18)
Primary or less	-0.59***	-0.56***	-0.55***	-0.57***	-0.57***	-0.58***	-0.55***	-0.58***	-0.65***	-0.61***
Education (1/0)	(-14.28)	(-6.96)	(-8.34)	(-9.97)	(-10.64)	(-11.54)	(-9.98)	(-11.44)	(-12.05)	(-10.03)
High school (1/0)	-0.27***	-0.29***	-0.27***	-0.28***	-0.28***	-0.28***	-0.27***	-0.24***	-0.23***	-0.20***
	(-9.34)	(-5.35)	(-6.48)	(-7.40)	(-7.72)	(-8.09)	(-7.31)	(-6.00)	(-5.81)	(-4.59)
Geographical area	0.26***	0.32***	0.32***	0.30***	0.28***	0.31***	0.28***	0.23***	0.18***	0.12***
(1/0)	(10.93)	(6.25)	(8.88)	(8.68)	(8.38)	(10.18)	(9.63)	(8.15)	(5.71)	(3.76)
Refuse to declare	0.12*	0.33***	0.20*	0.17**	0.14*	0.09	0.04	0.03	0.08	-0.00
Income (1/0)	(1.66)	(3.64)	(2.53)	(2.15)	(1.84)	(1.21)	(0.38)	(0.32)	(0.62)	(-0.01)
Constant	5.81***	2.72	4.78***	4.64***	5.21***	7.58***	7.01***	6.36***	6.41***	8.06***
	(5.62)	(1.46)	(3.77)	(3.34)	(3.57)	(6.32)	(5.65)	(4.68)	(4.44)	(4.69)
No. of observations	2703.00	2703.00	2703.00	2703.00	2703.00	2703.00	2703.00	2703.00	2703.00	2703.00
R-square	0.67	0.66	0.66	0.67	0.67	0.67	0.67	0.67	0.66	0.65

Notes: t statistics in parentheses

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

Table 5.5: OLS and quantile regression for saving

	OLS	Q(0.10)	Q(0.20)	Q(0.30)	Q(0.40)	Q(0.50)	Q(0.6)	Q(0.7)	Q(0.8)	Q(0.90)
Save (1/0)	0.12***	0.16***	0.11**	0.13***	0.11***	0.09***	0.10***	0.09***	0.10**	0.12***
	(3.89)	(3.19)	(2.36)	(3.09)	(2.87)	(2.66)	(2.78)	(2.60)	(2.55)	(2.95)
Total household size	-0.02**	-0.00	-0.01	-0.02*	-0.03**	-0.01	-0.02*	-0.03***	-0.03*	-0.02*
	(-2.00)	(-0.08)	(-0.58)	(-1.64)	(-2.43)	(-1.48)	(-1.87)	(-3.01)	(-1.83)	(-1.68)
Household size age	0.06***	0.05*	0.05**	0.07***	0.08***	0.05***	0.06***	0.08***	0.06***	0.04*
15 plus	(4.07)	(1.79)	(2.07)	(3.01)	(4.40)	(3.32)	(3.25)	(4.25)	(2.86)	(1.91)
Full employment (1/0)	0.16***	0.00	0.06	0.11	0.10	0.17***	0.17**	0.24***	0.23***	0.10
	(3.01)	(0.01)	(0.65)	(1.53)	(1.49)	(2.82)	(2.52)	(3.43)	(3.31)	(1.32)
Part time employment	0.02	-0.19*	-0.13	-0.01	0.01	0.07	0.04	0.07	0.10	-0.05
(1/0)	(0.36)	(-1.77)	(-1.17)	(-0.12)	(0.18)	(1.05)	(0.59)	(1.05)	(1.27)	(-0.51)
Voluntary unemployed	0.26***	0.17	0.19*	0.23***	0.21***	0.27***	0.27***	0.29***	0.31***	0.11
(1/0)	(4.71)	(1.50)	(1.93)	(3.25)	(3.21)	(4.55)	(3.95)	(4.29)	(3.99)	(1.30)
Unemployed (1/0)	0.01	-0.06	0.00	0.01	0.01	0.06	0.02	0.04	0.01	-0.15*
	(0.14)	(-0.52)	(0.02)	(0.11)	(0.15)	(0.99)	(0.30)	(0.60)	(0.21)	(-1.78)
Log age	-4.88***	-1.23	-4.06*	-4.19**	-4.46**	-6.50***	-6.05***	-6.04***	-5.13**	-6.68***
	(-3.53)	(-0.50)	(-1.92)	(-2.24)	(-2.24)	(-3.93)	(-3.97)	(-3.41)	(-2.06)	(-3.53)
Log age squared	1.72***	0.53	1.45**	1.49**	1.56**	2.24***	2.08***	2.07***	1.77**	2.21***
	(3.83)	(0.66)	(2.10)	(2.46)	(2.38)	(4.14)	(4.20)	(3.64)	(2.21)	(3.69)
Low income (1/0)	-0.32***	-0.21***	-0.24***	-0.24***	-0.23***	-0.23***	-0.30***	-0.35***	-0.41***	-0.53***
	(-8.30)	(-3.24)	(-4.90)	(-4.66)	(-5.33)	(-5.31)	(-5.38)	(-6.75)	(-6.32)	(-8.72)
Middle income (1/0)	0.23***	0.31***	0.38***	0.31***	0.35***	0.32***	0.25***	0.20***	0.16*	0.02
	(5.00)	(3.33)	(5.59)	(5.16)	(6.31)	(6.12)	(3.83)	(3.55)	(2.37)	(0.37)
High income (1/0)	0.53***	0.69***	0.74***	0.66***	0.65***	0.65***	0.56***	0.46***	0.41***	0.27***
	(8.93)	(6.20)	(7.16)	(6.77)	(8.37)	(9.07)	(6.71)	(7.03)	(5.24)	(3.67)
Married (1/0)	-0.02	-0.04	-0.01	-0.00	0.03	0.04	0.04	-0.04	-0.07	-0.01
	(-0.61)	(-0.55)	(-0.20)	(-0.07)	(0.67)	(0.90)	(0.77)	(-0.72)	(-1.19)	(-0.21)
Single (1/0)	-0.01	-0.05	-0.05	-0.03	-0.00	0.03	0.01	-0.05	-0.03	0.00
	(-0.31)	(-0.76)	(-0.72)	(-0.61)	(-0.04)	(0.59)	(0.24)	(-0.77)	(-0.46)	(0.06)
Black (1/0)	-0.67***	-0.78***	-0.73***	-0.73***	-0.71***	-0.65***	-0.57***	-0.58***	-0.59***	-0.47***
	(-13.13)	(-7.90)	(-8.03)	(-10.45)	(-13.89)	(-13.20)	(-11.12)	(-7.87)	(-9.25)	(-6.66)
White (1/0)	0.10*	0.07	0.05	0.05	0.05	0.11**	0.17***	0.14*	0.14*	0.21***
	(1.90)	(0.56)	(0.49)	(0.66)	(0.86)	(1.97)	(2.71)	(1.81)	(1.76)	(3.08)
Coloured (1/0)	-0.34***	-0.41***	-0.33***	-0.33***	-0.33***	-0.31***	-0.26***	-0.29***	-0.28***	-0.18***

	OLS	**Q(0.10)**	**Q(0.20)**	**Q(0.30)**	**Q(0.40)**	**Q(0.50)**	**Q(0.6)**	**Q(0.7)**	**Q(0.8)**	**Q(0.90)**
	(-6.27)	(-3.70)	(-3.61)	(-4.39)	(-6.12)	(-6.08)	(-4.69)	(-3.68)	(-3.78)	(-2.72)
Post matric (1/0)	0.25***	0.25***	0.22***	0.22**	0.26***	0.25***	0.25***	0.26***	0.23***	0.34***
	(6.21)	(3.33)	(3.87)	(3.23)	(4.71)	(5.50)	(5.16)	(5.60)	(3.90)	(4.93)
Distance to nearest	0.28***	0.38***	0.31***	0.29***	0.26***	0.26***	0.28***	0.31***	0.32***	0.28***
ATM from home (1/0)	(7.77)	(6.12)	(6.46)	(5.97)	(5.18)	(5.60)	(5.69)	(6.39)	(5.57)	(4.85)
Distance to nearest bank	0.11***	0.07	0.11**	0.09**	0.14***	0.15***	0.11**	0.08*	0.06	0.06
Branch from home (1/0)	(3.11)	(1.18)	(2.44)	(2.00)	(2.92)	(3.26)	(2.31)	(1.92)	(1.13)	(1.01)
Gender (1/0)	0.04*	0.03	0.06*	0.04	0.05	0.03	0.02	0.03	0.03	0.03
	(1.81)	(0.74)	(1.74)	(1.18)	(1.61)	(0.95)	(0.64)	(1.18)	(0.83)	(0.89)
Primary or less	-0.59***	-0.59***	-0.53***	-0.57***	-0.57***	-0.57***	-0.61***	-0.61***	-0.62***	-0.60***
Education (1/0)	(-14.32)	(-7.16)	(-8.55)	(-10.32)	(-9.96)	(-12.19)	(-12.24)	(-11.96)	(-10.54)	(-9.47)
High school (1/0)	-0.27***	-0.28***	-0.27***	-0.28***	-0.29***	-0.29***	-0.29***	-0.26***	-0.22***	-0.17***
	(-9.34)	(-4.77)	(-6.47)	(-7.10)	(-8.18)	(-8.49)	(-8.07)	(-6.93)	(-5.30)	(-4.03)
Geographical area (1/0)	0.27***	0.31***	0.33***	0.32***	0.30***	0.32***	0.29***	0.23***	0.18***	0.10***
	(11.13)	(4.92)	(9.11)	(9.21)	(8.88)	(11.46)	(9.52)	(8.22)	(5.35)	(3.19)
Refuse to declare income	0.13*	0.31***	0.20**	0.12	0.13*	0.07	0.09	0.02	0.11	0.08
(1/0)	(1.77)	(3.53)	(2.42)	(1.35)	(1.79)	(1.00)	(0.89)	(0.17)	(0.51)	(0.45)
Constant	5.44***	2.00	4.32***	4.63***	4.98***	6.53***	6.37***	6.62***	6.20***	7.94***
	(5.24)	(1.10)	(2.79)	(3.26)	(3.38)	(5.34)	(5.59)	(4.86)	(3.30)	(5.45)
No. of observations	2703.00	2703.00	2703.00	2703.00	2703.00	2703.00	2703.00	2703.00	2703.00	2703.00
R-square	0.67	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.64

Notes: *t* statistics in parentheses

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

Table 5.6: OLS and quantile regression for monthly saving

	OLS	Q(0.10)	Q(0.20)	Q(0.30)	Q(0.40)	Q(0.50)	Q(0.6)	Q(0.7)	Q(0.8)	Q(0.90)
Monthly saving (1/0)	0.18***	0.20***	0.15***	0.17***	0.11***	0.13***	0.18***	0.21***	0.23***	0.17***
	(6.33)	(4.21)	(3.45)	(4.83)	(3.23)	(3.73)	(5.43)	(5.57)	(6.25)	(4.31)
Total household size	-0.02**	0.00	-0.01	-0.02*	-0.02**	-0.01	-0.01	-0.03***	-0.03***	-0.04***
	(-2.07)	(0.09)	(-0.54)	(-1.78)	(-1.98)	(-1.20)	(-1.43)	(-3.17)	(-2.66)	(-3.06)
Household size age	0.06***	0.05	0.06**	0.07***	0.07***	0.05***	0.05***	0.07***	0.07***	0.07***
15 plus	(4.12)	(1.47)	(2.43)	(3.45)	(3.89)	(2.90)	(3.10)	(4.02)	(3.55)	(3.50)
Full employment (1/0)	0.13**	0.00	0.07	0.04	0.09	0.17***	0.15**	0.16**	0.17**	0.17*
	(2.43)	(0.01)	(0.78)	(0.61)	(1.26)	(2.74)	(2.30)	(2.37)	(2.37)	(1.80)
Part time employment (1/0)	0.01	-0.17	-0.13	-0.08	-0.01	0.09	0.04	0.02	0.07	0.01
	(0.10)	(-1.34)	(-1.12)	(-1.04)	(-0.17)	(1.31)	(0.65)	(0.21)	(0.85)	(0.08)
Voluntary unemployment	0.27***	0.15	0.21**	0.20***	0.24***	0.29***	0.28***	0.31***	0.31***	0.22**
(1/0)	(4.78)	(1.32)	(2.11)	(2.80)	(3.57)	(4.61)	(4.23)	(4.47)	(3.82)	(2.38)
Unemployed (1/0)	0.01	-0.05	0.01	-0.00	-0.00	0.09	0.03	0.02	0.02	-0.10
	(0.26)	(-0.37)	(0.09)	(-0.04)	(-0.07)	(1.41)	(0.48)	(0.39)	(0.34)	(-1.14)
Log age	-4.17***	-1.67*	-3.27	-3.13	-3.69*	-6.29***	-6.03***	-4.12**	-3.43	-4.88**
	(-2.97)	(-0.57)	(-1.47)	(-1.54)	(-1.90)	(-3.69)	(-3.81)	(-2.39)	(-1.48)	(-2.57)
Log age squared	1.48**	0.66	1.19	1.12*	1.29**	2.17***	2.06***	1.42**	1.25*	1.70**
	(3.24)	(0.68)	(1.63)	(1.69)	(2.03)	(3.91)	(4.02)	(2.56)	(1.67)	(2.83)
Low income (1/0)	-0.33***	-0.22**	-0.26***	-0.23***	-0.23***	-0.24***	-0.28***	-0.36***	-0.46***	-0.54***
	(-8.33)	(-2.57)	(-5.26)	(-4.29)	(-5.10)	(-5.39)	(-5.15)	(-6.57)	(-6.76)	(-7.60)
Middle income (1/0)	0.24***	0.34***	0.37***	0.36***	0.38***	0.35***	0.29***	0.24***	0.13*	-0.00
	(5.11)	(3.71)	(5.07)	(5.77)	(6.87)	(6.23)	(4.71)	(3.70)	(1.86)	(-0.04)
High income (1/0)	0.52***	0.64***	0.71***	0.71***	0.71***	0.67***	0.62***	0.49***	0.36***	0.21**
	(8.14)	(4.70)	(6.54)	(7.16)	(9.01)	(8.70)	(8.31)	(6.51)	(4.22)	(2.49)
Married (1/0)	-0.02	-0.05	-0.01	0.03	0.01	0.04	0.01	-0.04	-0.00	-0.01
	(-0.42)	(-0.69)	(-0.24)	(0.52)	(0.13)	(0.87)	(0.22)	(-0.79)	(-0.02)	(-0.12)
Single (1/0)	-0.01	-0.05	-0.04	-0.00	-0.01	0.02	0.01	-0.06	0.03	0.05
	(-0.17)	(-0.62)	(-0.66)	(-0.07)	(-0.23)	(0.31)	(0.26)	(-1.08)	(0.53)	(0.62)
Black (1/0)	-0.65***	-0.73***	-0.71***	-0.75***	-0.68***	-0.64***	-0.58***	-0.52***	-0.57***	-0.43***
	(-12.54)	(-3.90)	(-9.83)	(-10.97)	(-13.72)	(-12.70)	(-10.89)	(-9.02)	(-8.01)	(-5.46)
White (1/0)	0.14**	0.16	0.09	0.07	0.11*	0.14**	0.19***	0.22***	0.24***	0.26***
	(2.45)	(0.77)	(1.01)	(0.92)	(1.82)	(2.38)	(3.20)	(3.47)	(2.87)	(3.60)
Coloured (1/0)	-0.30***	-0.40**	-0.28***	-0.34***	-0.29***	-0.29***	-0.25***	-0.21***	-0.26***	-0.11
	(-5.55)	(-2.08)	(-3.83)	(-4.90)	(-5.70)	(-5.57)	(-4.40)	(-3.39)	(-3.28)	(-1.41)

	OLS	Q(0.10)	Q(0.20)	Q(0.30)	Q(0.40)	Q(0.50)	Q(0.6)	Q(0.7)	Q(0.8)	Q(0.90)
Post matric (1/0)	0.25***	0.28***	0.25***	0.22***	0.25***	0.23***	0.24***	0.24***	0.25***	0.34***
	(5.96)	(3.59)	(4.46)	(3.66)	(4.37)	(4.63)	(4.98)	(4.81)	(4.31)	(3.61)
Distance to nearest ATM	0.28***	0.39***	0.32***	0.29***	0.29***	0.27***	0.29***	0.28***	0.29***	0.29***
From home (1/0)	(7.75)	(5.85)	(6.93)	(5.72)	(5.18)	(6.15)	(6.55)	(5.90)	(4.74)	(5.60)
Distance to nearest bank	0.10***	0.06	0.08*	0.09*	0.09*	0.13***	0.11***	0.11***	0.08	0.04
Branch from home (1/0)	(2.95)	(0.96)	(1.81)	(1.85)	(1.75)	(3.20)	(2.58)	(2.59)	(1.34)	(0.85)
Gender (1/0)	0.03	0.03	0.05	0.04	0.03	0.02	0.01	0.01	0.05	0.05
	(1.31)	(0.64)	(1.36)	(1.19)	(0.97)	(0.57)	(0.36)	(0.27)	(1.32)	(1.03)
Primary or less education	-0.57***	-0.53***	-0.55***	-0.53***	-0.56***	-0.56***	-0.55***	-0.55***	-0.56***	-0.65***
(1/0)	(-13.63)	(-6.66)	(-7.82)	(-8.79)	(-9.70)	(-11.12)	(-11.00)	(-10.97)	(-10.11)	(-9.48)
High school (1/0)	-0.26***	-0.25***	-0.28***	-0.26***	-0.29***	-0.28***	-0.28***	-0.21***	-0.18***	-0.20***
	(-8.71)	(-4.29)	(-5.99)	(-5.96)	(-7.66)	(-8.14)	(-7.93)	(-5.86)	(-4.30)	(-4.15)
Geographical area (1/0)	0.27***	0.31***	0.31***	0.33***	0.30***	0.31***	0.29***	0.23***	0.17***	0.12***
	(10.90)	(4.66)	(8.59)	(9.05)	(9.01)	(9.97)	(10.39)	(8.38)	(5.66)	(3.11)
Refuse to declared income	0.11	0.35***	0.14*	0.14*	0.10	0.03	0.09	0.03	-0.05	0.17
(1/0)	(1.53)	(3.27)	(1.89)	(1.78)	(1.38)	(0.41)	(0.87)	(0.34)	(-0.31)	(1.44)
Constant	4.86***	2.26	3.68**	3.82**	4.41***	6.34***	6.32***	5.14***	4.71***	6.20***
	(4.61)	(1.02)	(2.25)	(2.52)	(3.09)	(5.00)	(5.36)	(3.94)	(2.66)	(4.30)
No. of observations	2564.00	2564.00	2564.00	2564.00	2564.00	2564.00	2564.00	2564.00	2564.00	2564.00
R-square	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.64

Notes: *t* statistics in parentheses

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

Table 5.7: OLS and quantile regression for insurance

	OLS	Q(0.10)	Q(0.20)	Q(0.30)	Q(0.40)	Q(0.50)	Q(0.6)	Q(0.7)	Q(0.8)	Q(0.90)
Insurance (1/0)	0.16***	0.20***	0.13***	0.19***	0.16***	0.10***	0.13***	0.16***	0.19***	0.20***
	(6.29)	(4.60)	(2.98)	(6.33)	(5.15)	(3.42)	(3.88)	(4.84)	(5.86)	(5.11)
Total household size	-0.02**	0.00	-0.01	-0.02*	-0.03**	-0.02*	-0.02*	-0.03**	-0.03**	-0.03**
	(-2.20)	(0.23)	(-0.83)	(-1.84)	(-2.46)	(-1.64)	(-1.90)	(-2.07)	(-2.30)	(-2.04)
Household size age	0.06***	0.05*	0.05**	0.06***	0.07***	0.05***	0.06***	0.06***	0.07***	0.05***
15 plus	(4.20)	(1.71)	(2.45)	(3.89)	(3.88)	(3.12)	(3.20)	(3.51)	(3.80)	(2.68)
Full employment (1/0)	0.20***	0.12	0.10	0.15**	0.20***	0.23***	0.23***	0.27***	0.24***	0.10
	(3.72)	(1.58)	(1.11)	(2.15)	(2.84)	(3.63)	(3.35)	(4.80)	(4.17)	(1.62)
Part time employment	0.05	-0.07	-0.06	0.05	0.08	0.09	0.08	0.10	0.11	-0.05
	(0.93)	(-0.80)	(-0.51)	(0.67)	(1.02)	(1.38)	(1.07)	(1.54)	(1.57)	(-0.65)
Voluntary unemployment	0.29***	0.27***	0.24***	0.24***	0.28***	0.31***	0.30***	0.32***	0.31***	0.09
(1/0)	(5.13)	(3.14)	(2.62)	(3.40)	(4.51)	(4.90)	(4.33)	(4.55)	(4.46)	(1.22)
Unemployed (1/0)	0.05	0.07	0.05	0.06	0.09	0.09	0.08	0.07	0.02	-0.19**
	(0.90)	(0.93)	(0.51)	(0.94)	(1.30)	(1.48)	(1.19)	(1.37)	(0.35)	(-2.54)
Log age (1/0)	-5.67***	-3.78	-4.08**	-4.35**	-6.40***	-7.39***	-6.91***	-7.09***	-7.07***	-6.04***
	(-4.10)	(-1.45)	(-1.96)	(-2.52)	(-3.09)	(-4.53)	(-3.97)	(-4.61)	(-3.62)	(-3.34)
Log age squared (1/0)	1.95***	1.37*	1.44**	1.49***	2.18***	2.53***	2.36***	2.41***	2.39***	1.98***
	(4.35)	(1.64)	(2.12)	(2.64)	(3.19)	(4.76)	(4.15)	(4.94)	(3.82)	(3.43)
Low income (1/0)	-0.32***	-0.21***	-0.24***	-0.20***	-0.26***	-0.23***	-0.29***	-0.34***	-0.40***	-0.53***
	(-8.27)	(-3.50)	(-4.65)	(-4.45)	(-6.79)	(-5.35)	(-5.02)	(-6.66)	(-6.77)	(-8.55)
Middle income (1/0)	0.23***	0.27***	0.39***	0.33***	0.30***	0.33***	0.28***	0.21***	0.16**	0.01
	(4.95)	(3.43)	(5.83)	(5.44)	(5.78)	(6.16)	(3.95)	(3.70)	(2.62)	(0.20)
High income (1/0)	0.53***	0.70***	0.79***	0.66***	0.59***	0.65***	0.55***	0.44***	0.40***	0.29***
	(8.86)	(6.21)	(9.21)	(7.71)	(7.86)	(8.94)	(6.17)	(6.86)	(6.34)	(3.54)
Married (1/0)	-0.01	-0.03	-0.01	0.01	0.05	0.04	0.00	-0.04	0.00	-0.03
	(-0.23)	(-0.44)	(-0.17)	(0.21)	(1.21)	(0.86)	(0.04)	(-0.78)	(0.06)	(-0.45)
Single (1/0)	-0.01	-0.04	-0.05	-0.02	0.00	0.02	-0.01	-0.04	0.02	0.04
	(-0.13)	(-0.59)	(-0.85)	(-0.35)	(0.06)	(0.31)	(-0.19)	(-0.72)	(0.42)	(0.52)
Black (1/0)	-0.69***	-0.84***	-0.76***	-0.78***	-0.72***	-0.66***	-0.61***	-0.61***	-0.60***	-0.51***
	(-13.58)	(-9.75)	(-9.39)	(-13.03)	(-13.18)	(-12.53)	(-10.86)	(-9.93)	(-10.86)	(-7.36)
White (1/0)	0.07	-0.01	-0.01	0.02	0.06	0.07	0.13*	0.11*	0.05	0.17**
	(1.28)	(-0.05)	(-0.16)	(0.23)	(0.92)	(1.27)	(1.91)	(1.70)	(0.73)	(2.34)
Coloured (1/0)	-0.37***	-0.48***	-0.36***	-0.41***	-0.36***	-0.33***	-0.31***	-0.33***	-0.31***	-0.21***

	OLS	**Q(0.10)**	**Q(0.20)**	**Q(0.30)**	**Q(0.40)**	**Q(0.50)**	**Q(0.6)**	**Q(0.7)**	**Q(0.8)**	**Q(0.90)**
	(-6.84)	(-5.12)	(-4.46)	(-6.75)	(-6.44)	(-6.29)	(-5.25)	(-5.01)	(-4.80)	(-3.08)
Post matric (1/0)	0.27***	0.29***	0.23***	0.24***	0.23***	0.24***	0.26***	0.28***	0.25***	0.35***
	(6.62)	(4.25)	(4.62)	(5.08)	(4.63)	(4.77)	(4.66)	(6.00)	(5.10)	(5.53)
Distance to nearest ATM	0.29***	0.41***	0.34***	0.30***	0.25***	0.27***	0.31***	0.29***	0.28***	0.29***
From home (1/0)	(8.07)	(6.86)	(6.78)	(6.85)	(5.60)	(5.35)	(5.36)	(6.12)	(5.90)	(5.02)
Distance to nearest bank	0.10***	0.03	0.08	0.07*	0.14***	0.14***	0.08	0.08*	0.09**	0.03
Branch from home (1/0)	(2.91)	(0.54)	(1.62)	(1.83)	(3.23)	(2.90)	(1.43)	(1.93)	(2.10)	(0.66)
Gender (1/0)	0.04*	0.04	0.05	0.07**	0.04	0.03	0.03	0.03	0.01	0.04
	(1.68)	(0.93)	(1.46)	(2.11)	(1.28)	(0.92)	(1.09)	(1.07)	(0.31)	(0.94)
Primary or less education	-0.59***	-0.61***	-0.54***	-0.55***	-0.58***	-0.59***	-0.61***	-0.65***	-0.61***	-0.61***
(1/0)	(-14.41)	(-7.56)	(-7.69)	(-11.01)	(-11.24)	(-12.07)	(-11.37)	(-11.75)	(-10.13)	(-11.87)
High school (1/0)	-0.27***	-0.28***	-0.29***	-0.30***	-0.29***	-0.30***	-0.29***	-0.25***	-0.21***	-0.16***
	(-9.53)	(-5.34)	(-6.45)	(-8.89)	(-8.47)	(-8.33)	(-7.95)	(-6.70)	(-5.44)	(-3.97)
Geographical area (1/0)	0.28***	0.32***	0.31***	0.33***	0.33***	0.33***	0.29***	0.24***	0.16***	0.11***
	(11.59)	(6.41)	(8.20)	(9.11)	(10.51)	(11.76)	(9.50)	(8.40)	(5.42)	(3.42)
Refuse to declared income	0.13*	0.31***	0.15	0.14**	0.05	0.08	0.09	0.05	0.15	0.14
	(1.80)	(3.41)	(1.49)	(2.00)	(0.78)	(1.16)	(0.76)	(0.60)	(1.27)	(1.20)
Constant	6.01***	3.74*	4.33***	4.77***	6.39***	7.14***	7.03***	7.39***	7.59***	7.46***
	(5.80)	(1.87)	(2.85)	(3.71)	(4.20)	(5.90)	(5.43)	(6.09)	(5.10)	(5.39)
No. of observations	2703.00	2703.00	2703.00	2703.00	2703.00	2703.00	2703.00	2703.00	2703.00	2703.00
R-square	0.67	0.66	0.66	0.66	0.67	0.67	0.67	0.67	0.66	0.64

Notes: *t* statistics in parentheses

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 SUMMARY OF KEY FINDINGS

There are growing bodies of empirical evidence showing that financial development is essential for economic growth: unlocking the entrepreneurial abilities of the poor and thereby leading to a reduction in poverty and income inequality (King and Levine, 1993; Levine, 2005; Aziakpono, 2011; Beck et al., 2007a). However, the financial sector in many SSA countries remains largely underdeveloped despite massive financial reforms in the 1980s to transform the sector. For example, private sector credit as a ratio of GDP in SSA has been below 25% since the 1990s and the number of adults 15 years and older with formal bank account increased by 10% to 34% in 2014 including mobile money accounts (Allen et al., 2014; Demirgüç-Kunt et al., 2014). Furthermore, available empirical evidence shows that broader financial access reduces poverty and income inequality (Beck et al., 2007a; Burgess and Pande, 2005; Bruhn and Love, 2013; Allen et al., 2012). This has intensified the call to broaden financial access to all by international and domestic development practitioners and policy makers because greater financial inclusion also influences other core aspects of the financial system (Cull et al., 2012; Chiwira et al., 2013; Mehrotra and Yetman, 2015; Khan, 2011). Hence, one would expect developed financial systems and greater financial access to be associated with improvements in well-being. For example, reducing poverty and income inequality and unlocking the entrepreneurial potential of poor talented individuals would support inclusive economic growth. However, this is not the case in SSA because poverty and income inequality has remained stubbornly high after a decade and a half of robust economic growth. Furthermore, the shortage of empirical evidence linking financial development to welfare as well as between financial inclusion and welfare makes it difficult to evaluate the effect of financial systems on welfare in SSA. The few available studies, particularly on financial development and welfare as measured by the Gini coefficient in Africa, have some methodology limitations. Meanwhile, evidence from the access dimension of financial systems is scant and comes mostly from microfinance activities, making it difficult to generalise findings because microfinance provides selected access.

The purpose of this study was to explore the relationship between financial development, financial inclusion and welfare dynamics in SSA. This is broken down into four specific objectives. The first objective was broken down into two sections: the first section demonstrated the linkages between

financial inclusion and the other core aspect of the financial system, and the second section gave a comparative analysis of the level of financial inclusion across regions in SSA. The second main objective focused on the long-run relationship between financial development and income inequality for a selected group of 15 African countries (Botswana, Côte d'Ivoire, Egypt, Ethiopia, Ghana, Lesotho, Morocco, Malawi, Mauritania, Mauritius, Nigeria, Rwanda, South Africa, Tunisia and Uganda) from 1985 to 2007 using the Standardised World Income Inequality dataset created by Solt (2009). This objective employed the augmented mean group (AMG) to examine this relationship. The strength of the AMG is its ability to account for country-specific heterogeneity as opposed to the homogeneous slope coefficient reported by previous studies on this topic. Hence, this objective addressed the methodological limitation cited earlier by reporting country-specific parameters of the relationship between financial development and income inequality. The third objective investigated the relationship between financial inclusion and welfare in a cross-section of 37 SSA countries using the Global Findex 2011. Cross-sectional regression analysis was performed due to the nature of the data available. However, the advantage of the Global Findex dataset is the ease of comparability across countries, thus addressing the problem of generalisation raised earlier. The last objective examined the relationship between financial inclusion and asset ownership in South Africa using the FinScope 2014 consumer survey. This last objective focused on South Africa for two reasons. Firstly, there is a lack of data on financial inclusion and assets ownership across SSA countries. Secondly, availability of suitable and quality financial inclusion data with sufficient indicators of assets ownership at the individual level that can be used to proxy such a relationship. This made South Africa a perfect choice to deepen the understanding of the relationship between financial inclusion and welfare as proxied by assets ownership. Since the interest is on individuals at the bottom end of asset ownership, quantile regression was used to examine this relationship. This objective provided more insights on how asset ownership by individuals at the bottom of the asset distribution changes with changes in the level of financial inclusion.

This chapter accomplishes three purposes. Firstly, it provides a general summary of the key results of the study presented in Chapters 2 to 5. Secondly, it highlights the policy implications of the results, and lastly it offers some policy recommendations.

6.2 SUMMARY OF KEY FINDINGS AND POLICY IMPLICATIONS

This section summarises key findings concerning the level of financial inclusion across regions in SSA, the long-run relationship between financial development and income inequality in Africa, and

the relationship between financial inclusion and welfare in SSA. Finally, the section discusses some possible implications of the results.

6.2.1 Financial inclusion, financial stability, financial integrity and financial consumer protection

The study started by demonstrating the linkages between financial inclusion and other core aspects of the financial system. The emerging evidence clearly showed that financial inclusion is interrelated in several ways with financial stability, financial integrity and financial consumer protection. This implies that attempts to boost one of these aspects automatically strengthens the others. For example, greater financial inclusion brings more people into the formal financial sector, which is likely to increase aggregate savings and diversify the deposits base as well as the loan portfolio of banks. This makes banks more resilient to systemic risk, therefore enhancing financial stability, which in turn positively influences the integrity of the financial system. The same analogy applies to the other aspects: financial integrity, financial stability and financial consumer protection. Secondly, evidence from the descriptive analysis on access to account, credit and saving at formal financial institutions showed great variation and huge unmet demand for financial services across all the regions in SSA. On average, about 54.5% of adults 15 years and older initiated a new loan in SSA in 2014 but only 6% borrowed from the formal financial sector. Across the regions, the rate of formal saving and borrowing in Southern, East and non-French-speaking West Africa (Ghana, Nigeria, Sierra Leone and Mauritania) is about twice as high as the rate in French-speaking West Africa and Central African countries. It also emerged from the analysis that French-speaking African countries lack basic institutional structures to support and empower consumers, and this correlates with the low level of financial inclusion observed in French-speaking countries.

6.2.2 Financial development and income inequality in Africa

The emerging evidence suggest that the relationship between financial development and income inequality in the group of African countries studied is non-linear and varies between *inverted u-shape* and *u-shape* depending on the measure of financial development. Specifically, the analysis found no evidence to suggest that financial development reduces income inequality (negative linear relationship) except for Côte d'Ivoire where bank deposits was used as a measure of financial development.

When domestic credit to GDP was used as a measure of financial development, the inverted *u-shape* hypothesis of Greenwood and Jovanovic (1990) was at least 5% statistically significant in Botswana and Lesotho. If financial development is measured as bank deposits to GDP, the *inverted*

u-shape was confirmed in Botswana and Rwanda. This suggests that the financial sector is still at the early stages of development, and as such is associated with rising income inequality. Furthermore, both measures of financial development found evidence of a *u-shape* relationship between financial development and income inequality in Ghana, Côte d'Ivoire, Nigeria, South Africa, Egypt, Morocco, Tunisia and Uganda. This suggests that financial development will reduce income inequality even at the early stages of financial development up to certain levels where further financial development increases income inequality. Clarke et al. (2006) termed the point at which further financial development increases income inequality as the *inequality-widening hypothesis.* The results also suggested that the level of economic development influenced income inequality. The Kuznets (1955) *inverted u-shape* relationship between income inequality and GDP per capita was supported only in Lesotho, Botswana and Uganda using both measures of financial development. These results suggested that income inequality increased at lower levels of GDP per capita and declined at higher levels of GDP per capita. These results therefore echoed the limitations to impose the homogenous slope assumption in long-run analysis and emphasised the importance of country-specific analysis in long panel data. Finally, the *u-shape relationship* is likely to capture the banking and financial crises of the 1980s and late 1990s triggered by ongoing financial reforms that falls within the period of study (1985-2007).

6.2.3 The relationship between financial inclusion and welfare in sub-Saharan Africa

The empirical evidence suggested that some aspects of financial inclusion exerted more influence on welfare than others, and that financial inclusion may negatively influence welfare in the short run. Firstly, financial inclusion was found to have a positive influence on the composite HDI through account ownership, electronic payment and formal loan and saving. However, the results from electronic payment were both positive and negative, which was expected as financial inclusion can induce some users into indebtedness. Meanwhile, the evidence from formal loan and saving were not robust as the majority of the models estimated were positive but not statistically significant.

Nevertheless, if one examines the relationship between financial inclusion and a single measure of welfare, the picture looks different. For example, the results showed that health insurance and loans to pay school fees reduced the headcount poverty ratio, and the magnitude of results was higher in rural areas. The results further showed that account ownership, health insurance and formal loan reduced under-five mortality rate per 1,000 live births. Therefore, to enhance economic welfare, policies to improve access and use of these aspects of financial inclusion should be encouraged.

That is, access to account ownership, health insurance, formal loans and loan to pay school fees are essential to reduce the poverty headcount ratio and the under-five mortality rate per 1,000 live births in rural areas.

Lastly, income inequality showed a positive relationship with account use for business purposes, electronic payment and formal saving. This implies that financial inclusion increases income inequality at least in the short run and this finding is almost similar to the *u-shape* discussed in Section 6.2.2. Several factors including current urban practice and governance, colonial institutions and excess liquidity in the banking sector of SSA are likely to drive this positive relationship. However, the positive relationship can be a short-run phenomenon but it will depend on future access and the productivity of labour. If few people gained financial access, the spillover will be small and the relationship may prevail for longer. Nevertheless, the positive relationship seems to confirm the prevailing situation in SSA: robust economic growth for over a decade and a half and rising income inequality.

6.2.4 The relationship between financial inclusion and individual asset ownership in South Africa

The results showed that financial inclusion has a positive relationship with asset ownership and that great heterogeneity existed between asset ownership at the lower and upper tails of the income strata. The magnitude of estimated coefficients for individuals at the bottom quantiles (10^{th}, 20^{th} and 30^{th}) of the asset distribution was higher than the median asset ownership, an indication that asset building social welfare programmes will disproportionately benefit the poor. Meanwhile, the weak response by individuals at the 40^{th}, median and 50^{th} quantiles was likely to reflect the fact that they have acquired these basic assets. Hence, an increment in financial access does not add any incentive to acquire more of the same assets and these individuals may not be rich enough to acquire more luxury assets.

With a well-developed financial sector and a functioning social welfare system, these results suggest that *asset-building programmes* will be a suitable complementary strategy to fortify the income transfer approach to poverty alleviation. That is, well-designed incentives that encourage the poor to save through “matched savings” associated with *asset building social policies* will have a long-term effect at the lower end of asset ownership. The benefits of encouraging the poor to save for post-secondary education of their children outweigh the costs of not doing so as this is likely to give hope to the 11.9 million children currently receiving child support grants. It is obvious that these children may face challenges financing post-secondary education. If proper strategies are not

in place to ensure capacity development and empowerment of the poor and low-income families, high demands on the fiscal budget are likely in the near future. The labour force participation rate may fall, thus narrowing the tax base while poverty, social unrest and widening of income inequality will continue to persist.

6.2.5 Synthesis of results and policy implications

The results discussed above bear some resemblance to the current influence that the financial sectors in SSA exert on welfare: robust economic growth with rising income inequality and sluggish decline in the headcount poverty ratios. They also highlight some areas that authorities should focus attention on, to strengthen the influence of the financial system to serve as the engine of growth and welfare enhancement.

First, financial inclusion interacts with financial stability, financial integrity and financial consumer protection. This suggests that any weaknesses/strengthening in one dimension automatically affects the others, either negatively or positively. Within this framework, it emerged that French-speaking West and Central African countries seriously lack basic financial consumer protection structures and this affects financial integrity in the region. Hence, French-speaking African countries have the lowest level of access to formal accounts, saving and credit compared to non-French-speaking West Africa, Southern and East Africa.

The authorities in these regions will have to take the necessary remedial actions such as building institutional structures and human capital to support financial consumer protection. Once there are checks and balances in place to ensure that financial services providers do not use their informational advantage to exploit consumers and those consumers are fully aware of the benefits and risks of using financial services, uptake will increase. Furthermore, to circumvent the high cost of delivery of financial services in rural areas because of long distances, policy makers should encourage partnership between banks and telecommunication companies to provide financial services through mobile money.

Secondly, the *u-shape* relationship between financial development and income inequality in Africa closely mirrors the prevailing rising levels of income inequality with over a decade and a half of robust economic growth. The period studied (1985 to 2007) coincides with the ‘lost decade’ in Africa characterised by banking and financial crises, and our results capture the true outcome of these reforms on welfare. Apart from the *u-shape*, the level of GDP per capita also influenced income inequality and this partly reflects Africa’s current development and growth strategy that focuses more on the formal sector.

An important policy intervention will be to account for the high level of informality of most African economies by connecting the informal to the formal sector through improvements in the quality of basic services. Second tier banking or specialist formal financial institutions are possible options to increase financial outreach in the rural areas. Banking and financial crises should be avoided as much as possible by undertaking a due diligence evaluation of new proposals for financial reforms before they are implemented as well as taking ownership of reforms. However, this depends on whether there is sufficient human capacity to properly evaluate, monitor and run such institutions. This again highlights the importance of loans to pay school fees discussed earlier. The role of technology and innovation also comes into play to ameliorate deficient physical infrastructure on the continent.

Thirdly, some aspects of financial inclusion are instrumental in enhancing welfare, whereas other aspects have a negative effect on income inequality. This speaks to the need for tailor-made delivery of financial services. For example, personal health insurance and loans to pay school fees displayed a negative relationship with the poverty headcount ratio. Furthermore, formal account ownership, health insurance and formal loans were found to reduce the under-five mortality rate per 1,000 live births. The magnitudes of the estimated coefficients across the population segment were quite high. This clearly demonstrates the importance of micro-insurance for the poor and the need for government to build public trust in the financial system to increase uptake and use of financial access. Furthermore, where possible the government should incentivise public private sector initiatives to encourage loans for vocational training, particularly in the rural areas and among women where poverty is persistent. A second aspect of this result was that financial inclusion increased income inequality and this possibly reflected the lack of financial outreach and some institutional weaknesses such as limited focus on the formal sector to drive growth. As discussed earlier, holistic approaches that consider the importance role of the informal sector will be a viable policy intervention to enhance full participation of all spheres of the economy in the growth process.

Finally, financial inclusion showed a strong positive relationship with individual asset ownership at the lower quantiles of the asset distribution function and this has implications for social policy in South Africa. Generally, this means that encouraging asset ownership at the lower tail of the asset distribution through *asset building social welfare policies* will improve the welfare of those at the bottom of the income pyramid. For South Africa, with about 16.9 million people currently depending solely on income transfer, it signals the need to start thinking beyond transfers and investing in capacity development of the poor. This can work through asset building programmes

such as child accounts at birth, child development accounts and individual development accounts. Through any of these programmes, the government can incentivise low-income families to save for a particular purpose through matched deposits and access to such matched deposits is restricted until maturity. Specifically, a progressive asset building social policy that combines income transfer with asset building will offer a sustainable pathway out of poverty for the poor and low-income families. At maturity, invested funds must be used for down payment on a house, to pay for post-secondary education or to start a small business. Asset building programmes have delivered positive results on poverty and vulnerability in Uganda and Zimbabwe as well as changing youth saving behaviours in Ghana. Unless attempted, it will be difficult to predict the outcome but the chances of success are high given the state of financial sector development and effective social welfare system in South Africa.

However, the challenge will be to ensure that invested funds are not diverted into other uses not related to asset building social welfare and the possibility of leakages. One option is to use a bottom-up strategy where the participants in the community own the project and this will ensure their full commitment, another option will be to enforce a monitoring and evaluation strategy. Furthermore, the compulsory financial literacy and management skill training component attached to asset building social welfare if manage effective, is likely to influence financial attitude and behaviour.

6.3 THE CONTRIBUTION OF THE STUDY

Overall, this study contributes to the existing literature in the following ways. Firstly, it provides a comprehensive comparable analysis of the level of financial inclusion across regions in SSA. Previous studies have failed to analyse the contribution of each country and region to the high level of financial exclusion in SSA. This study fills the gap by separating French-speaking West and Central African countries from non-French-speaking countries and showed that French-speaking West and Central Africa have the lowest level of financial inclusion in SSA.

Secondly, the augmented mean group (AMG) technique was to model the long-run relationship between financial development and income inequality and this provided another contribution to empirical modelling. Unlike previous studies that assume homogeneity of long-run slope coefficients across countries, AMG has the advantage that it provides country-specific estimates, thereby accounting for heterogeneity across countries, and is robust to cross-sectional dependence. Thus, instead of averaging the data arbitrarily, this study investigates the time series properties of

the data and applies macro-panel time series techniques in the analysis. This process avoids the risk of reporting unstable and biased estimated slope coefficients.

Thirdly, this study explored the relationship between various aspects of financial inclusion and welfare using a dataset that is comparable across countries. This objective therefore provided more insights on which aspects of financial inclusion should be encouraged and for which segment of the population, contributing to enhanced targeted policy interventions. Furthermore, the study deepens this analysis using individual survey data to explore the relationship between financial inclusion and asset ownership in South Africa. By focusing on the changes in asset ownership for those at the bottom end of the asset distribution function, the study demonstrates the importance of asset building as a complementary strategy to the income transfer to assist the poor to escape poverty.

Apart from filling the gaps in the empirical literature, the current study has some limitations. One such limitation relates to the nature of available data on the demand and supply sides of financial services at the individual/household level. The global financial inclusion (Global Findex) dataset, which is the first comprehensive survey data on the demand and supply sides of financial services, is not yet available as a panel. Hence, the data is suitable for cross-sectional analysis and not for sophisticated econometric modelling. Consequently, as the dataset develops into a panel, it will be necessary in the future to re-examine this relationship. The interpretation of the results was linked with the excess liquidity in the banking sector in SSA. However, excess liquidity was not the focus of this study, and accordingly is suggested as area for future studies to enhance understanding of how this affects access to and use of financial services in SSA.

Another limitation of the study comes from cross-sectional (N) and time (T) dimensions of the panel data used in the modelling. While 15 countries and 23 years are large enough to carry out analysis, the numbers of control variables included are limited because of the degrees of freedom. As such, the relationship should be re-examined as more data become available across countries. Furthermore, the interpretation of the *u-shape relationship* between financial development and income inequality was linked to banking and financial crises, but the study did not control for this and future studies can model this effect on income inequality in SSA.

Finally, financial inclusion and asset ownership is still a new area of empirical research and this is encouraging but data on asset building programmes, particularly in South Africa, is a challenge. However, further research is required using any rich financial inclusion dataset at household/individual level with sufficient indicators of assets to increase understanding on how financial inclusion can be used to raise the poor above the poverty level.

6.4 CONCLUDING REMARKS

In summary, emerging evidence suggests that financial development in the group of African countries examined does not lead to reduction in income inequality. There is strong evidence that greater financial development benefits the rich rather than the poor, lending more to rich households and neglecting the poor and under-served who cannot provide collateral, and this can be persistent in a weak institutional environment. This produces an initial decline in income inequality, giving rise to the *u-shape* relationship where later stages of financial development may be responsible for a widening in inequality. For two countries, the study found that income inequality increases at the early stages of financial development but as the financial sector develops further, the positive trend reverses into a negative trend. Furthermore, while some aspects of financial inclusion exert a positive influence on welfare such as the poverty headcount ratio and the under-five mortality rate per 1,000 live births, income inequality was found to have a positive relationship with financial inclusion. This may be due to the limited number of people with access to formal credit, and the situation is even worse in the informal sectors. Other factors include weak competition among banks and deficiencies in physical and financial infrastructure, which increase information asymmetry and risk of moral hazard.

However, the recent technological innovation in Africa is addressing some of the challenges to delivery of financial services to the poor and in rural areas. Nevertheless, a concerted effort is needed to develop supporting institutions, build human capital and create an enabling regulatory and supervisory environment to promote effective competition that will encourage wider financial inclusion.

REFERENCES

Abdi, H. & Valentin, D. (2007). Multiple correspondence analysis. In: Salkind, N. (ed.), Encyclopedia of measurement and statistics. Available online: https://www.researchgate.net/profile/Dominique_Valentin/publication/239542271_Multiple_Correspondence_Analysis/links/54a979900cf256bf8bb95c95.pdf. Accessed 20/04/ 2015.

ACCION. (2009). Mexico's prospects for full financial inclusion. A white paper from the financial inclusion 2020 project draft discussion September 2009. Available online: https:// www.centerforfinancialinclusion.org. Accessed 5/10/2014.

Adato, M. Carter, M.R. & May, J. (2006). Exploring poverty traps and social exclusion in South Africa using qualitative and quantitative data. *The Journal of Development Studies*, 42(2): 226-247. DOI: 10.1080/00220380550405345.

AfDB. (2010). Infrastructure deficit and opportunities in Africa. *Economic Brief,* 1(September).

AfDB. (2012). Briefing notes for AfDB long term strategy. Briefing Note 5: Income inequality in Africa. http://www.afdb.org/fileadmin/uploads/afdb/Documents/Policy-Documents/FINAL%20Briefing%20Note%205%20Income%20Inequality%20in%20Africa.pdf. Accessed 10/9/2014.

AfDB. (2013). Financial inclusion in Africa. In Triki, T. & Faye, I. (eds.), *Financial Inclusion in Africa*. Available online: http://www.afdb.org/Financial_Inclusion_in_Africa.pdf. Accessed 2/7/2013.

Aker, J.C. & Mbiti, I.M. (2010). Mobile phones and economic development in Africa. *Journal of Economic Perspectives,* 24(3): 207-232.

Allen, F., Carletti, E., Cull, R., Qian, Q.J., Senbet, L. & Valenzuela, P. (2012). *Improving access to banking: Evidence from Kenya*. World Bank Policy Research Working Paper Series No. 6593.

Allen, F., Carletti, E., Cull, R., Qian, Q.J., Senbet, L. & Valenzuela, P. (2014). The African financial development and financial inclusion gaps. *Journal of African Economies,* 23(5): 614-642.

Alliance for Financial Inclusion. (2010). Financial inclusion and measurement for regulators: Survey design and implementation, Policy Paper. Available online: http://www.afi-global.org/sites/default/files/afi_policypaper_datameasurement_en.pdf. Accessed 2/05/2014.

Alliance for Financial Inclusion. (2013). Putting financial inclusion on the global map. The 2013 Maya Declaration Progress Report. Available online: http://www.afi-global.org/sites/default/files/publications/afi_2013_maya_declaration_progress_report_final.pdf. Accessed 10/05/2014.

Ang, J.B. (2010). Finance and inequality: The case of India. *Southern Economic Journal*, 76(3): 738-761.

Aportela, F. (1999). Effects of financial access on saving by low-income people. Research Department, Banco de México, Mexico City.

Asongu, S.A. (2013). Investment and inequality in Africa. Which financial channels are good for the poor? *The African Finance Journal*, 15(2): 44-65.

Asongu, S.A. (2014). Correcting inflation with financial dynamic fundamentals: Which adjustments matter in Africa? *Journal of African Business*, 15(1): 64-73.

Asselin, L-M. (2002). Multidimensional poverty theory. Available online: http://www.pep-net.org/sites/pep-net.org/files/typo3doc/pdf/CBMS_training/composite_ind.pdf. Accessed 2/10/2015.

Austrian, K. & Muthengi, E. (2014). Can economic assets increase girls' risk of sexual harassment? Evaluation results from a social, health and economic asset-building intervention for vulnerable adolescent in Uganda. *Children and Youth Services Review*, 14: 168-175.

Aziakpono, J.M. (2016). The changing paradigms of financial sector policies and regulation in Africa: Lessons from the past. Inaugural lectures presented at Stellenbosch University, 8th September 2016.

Aziakpono, J.M. (2011). Financial development and economic growth: Theory and a survey of evidence. *Journal for Studies in Economics and Econometrics*, 35(1): 1-30.

Bae, K., Han, D. & Sohn, H. (2007). Importance of access to finance in reducing income inequality and poverty level. *International Review of Public Administration*, 7(1): 55-77.

Baltagi, B.H. (2008*). Econometric analysis of panel data* (4th ed.). Chichester: John Wiley & Sons Ltd.

Banerjee, A. & Newman, A.F. (1993). Occupational choice and the process of development. *Journal of Political Economy*, 101(2): 274-298.

Bankable Frontier Associates (2010). South African financial diaries and the Mzansi initiative five years later. A report commissioned by FinMark Trust. *Making Financial Markets Work for the Poor.* Available online: http://www.bankablefrontier.com. Accessed 14/05/2014.

Batuo, M.E., Guidi, F. & Mlambo, K. (2010). Financial development and income inequality: Evidence from Africa countries. MPRA Paper No. 25658. http://mpra.ub.uni-muenchen.de/25658. Accessed 12/09/2015.

Beck, T., Demirgüç-Kunt, A. & Levine, R. (1999). A new database on financial development and structure: World Bank Financial Sector Discussion Paper No. 2.

Beck, T., Demirgüç-Kunt, A. & Levine, R. (2004). *Finance, inequality, and poverty: cross-country evidence*. NBER Working Paper Series No. 10979.

Beck, T., Demirgüç-Kunt, A. & Levine, R. (2007a). Finance, inequality and the poor. *Journal of Economic Growth*, 12: 27-49.

Beck, T., Levine, R. & Levkov, A. (2007b). *Big bad banks? The impact of U.S. branch deregulation on income distribution*. NBER Working Paper Series No. 13299.

Beck, T., Levine, R. & Loaya, N. (2000). Finance and the sources of growth. *Journal of Financial Economics*, 58: 261-300.

Birkenmaier, J., Curley, J. & Kelly, P. (2012). Credit building in IDA programs: Early findings of a longitudinal study. *Research on Social Work Practice*, 22(6): 605-614.

Bittencourt, M.F.M. (2010). Financial development and inequality: Brazil 1985-99. *Economic Change and Restructuring*, 43: 113-130.

Booysen, F., Van Der Berg, S., Burger, R. & Maltitz, M.V. (2008). Using an asset index to assess trends in poverty in seven sub-Saharan African countries. *World Development*, 36(6): 1113-1130.

Boshara, R. (2005). Individual Development Accounts: Policies to build savings and assets for the Poor. Policy Brief, Welfare Reforms and Beyond #32. The Brooking Institution

Bruhn, M. & Love, I. (2013). The real impact of improved access to finance: Evidence from Mexico, *Journal of Finance*, 69(3): 1347-1376.

Buku, W.M. & Meredith, W. M. (2013). Safaricom and M-Pesa in Kenya. Financial inclusion and financial integrity. *Washington Journal of Law, Technology and Arts*, 8(3): 375-400.

Burgess, R. & Pande, R. (2005). Do rural banks matter? Evidence from the Indian social banking experiment, *The American Economic Review*, 95(3): 780-795.

CGAP (2012). Financial inclusion and the linkages to stability, integrity and protection: Insights from the South African experience. Available online: http://www.cgap.org/sites/default/files/I-SIP%20Report_1.pdf. Accessed 16/08/0215.

Cheatham, G.A. & Elliott, W. (2013). The effect of family college savings on postsecondary school enrollment rates of students with disabilities. *Economics of Education Review*, 33 (April): 95-111.

Chiapa, C., Prina, S. & Parker, A. (2015). The effect of financial inclusion on children's schooling, and parental aspirations and expectation. *Journal of International Development*. DOI:10.1002/jiid.3137.

Chiwira, O., Tadu, R. & Muyambiri, B. (2013). Financial inclusion and Financial stability: The important role of financial regulation in explaining the relationship: Empirical review, *Journal of Research in International Business and Management*, 3(4): 139-149.

Chowa, G.A.N., Ansong, D. & Masa, R. (2010). Assets and child well-being in developing countries: A research review. *Children and Youth Services Review*, 32(11): 1508-1519.

Chowa, G.A. N. & Masa, R.D. (2015). Asset ownership and future orientation of youth and their parents: Evidence from Ghana. *Child and Youth Services*, 36(2): 173-200.

Chowa, G.A.N., Masa, R.D., Wretman, C.J. & Ansong D. (2013). The impact of household possessions on youth's academic achievement in the Ghana Youthsave experiment: A propensity score analysis. *Economics of Education Review*, 33(April): 69-81.

Chuhan-Pole, P., Ferreira, F.H.G., Christiansen, L., Kambou, G., Angwafo, M., Pardo, C.G., Korman, V., Popova, A. & Buitano, M. (2014). An analysis of issues shaping Africa's economic future. *Africa's Pulse,* 9(April).

Clarke, G., Xu. L.C. & Zou, H-F. (2006). Finance and income inequality: What do the data tell us? *Southern Economic Journal,* 76(3): 578-596.

Clarke, G., Xu. L.C. & Zou, H-F. (2013). Finance and income inequality: Test of alternative theories. *Annals of Economics and Finance,* 14-2(A), 493-510.

Copestake, J. (2002). Inequality and polarising impact of microfinance: evidence from Zambia's copperbelt. *Journal of International Development,* 14: 743-755.

Crea, M.T., Lombe, M., Robertson, L., Dumba, L., Mushati, P., Makoni, J.C., Mavise, G., Eaton, J.W., Munattsi, B., Nyamukapa, C.A. & Gregson, S. (2013). Asset ownership among households caring for orphans and vulnerable children in rural Zimbabwe: the influence of ownership on children's health and social vulnerability. *AIDS Care*, 25(1): 126-132.

Cull, R., Demirgüç-Kunt, A. & Lyman, T. (2012). Financial inclusion and stability: What does research show? CGAP Brief. Available online: http://www.cgap.org. Accessed 09/05/2014.

Cull, R., Ehrbeck, T. & Holle, N. (2014). Financial inclusion and development: Recent impact evidence. CGAP Focus Note, No. 92 April 2014.

Culpeper, R. (2012). *The role of G20 in enhancing financial inclusion.* Heinrich Boll Stiftung Foundation. Available online: https://us.boell.org/2012/02/17/role-g20-enhancing-financial-inclusion. Accessed 03/06/2013.

Curley, J., Ssewamala, F.M., Nabunya, P., Ilic, V. & Keun, H.C. (2016). Child development accounts (CDAs): An asset-building strategy to empower girls in Uganda. *International Social Work,* 59(1): 18-31.

Dabla-Norris, E., Kochhar, K., Suphaphiphat, N., Ricka, F., & Tsounta, E. (2015). *Causes and consequences of income inequality: A global perspective*. IMF Staff Discussion Note/15/13. http://www.imf.org.

Deininger, K., & Squire, L. (1996). A new data set measuring income inequality. *The World Bank Economic Review,* 10(3): 565-91.

Demirgüç-Kunt, A. & Klapper, L. (2012a). *'Measuring financial inclusion', The Global Findex Database*. World Bank Policy Research Working Paper 6025.

Demirgüç-Kunt, A. & Klapper, L. (2012b). *Financial inclusion in Africa.* World Bank Policy Research Working Paper No. 6088.

Demirgüç-Kunt, A. & Klapper, L. (2013). *Measuring financial inclusion: Explaining variation in use of financial services across and within countries*. Brookings Papers on Economic Activity, Spring.

Demirgüç-Kunt, A., Klapper, L., Singer, D. & Oudheusden, P.V. (2014). *The Global FindexDatabase: Measuring financial inclusion around the world.* World Bank Policy Research Working Paper No. 7255.

Demirgüç-Kunt, A. & Levine, R. (2009). *Finance and inequality: Theory and evidence*. World Bank Policy Research Paper No. 4967.

Deng, S., Huang, J., Jin, M. & Sherraden, S. (2014). Household assets, school enrollment, and parental aspirations for children's education in rural China: Does gender matter? *International Journal of Social Welfare*, 23: 185-194.

Duflo, E., Banerjee, A., Glennerster, R. & Kinnan, C.G. (2013). *The miracle of microfinance? Evidence from a randomized evaluation*. NBER Working Paper No. 18950.

Dupas, P. & Robinson, J. (2013). Savings constraints and microenterprise development: Evidence from a field experiment in Kenya, *American Economic Journal: Applied Economics 2013,* 5(1): 163-192.

Eberhardt, M. (2012). Estimating panel time-series models with heterogeneous slopes. *The Stata Journal,* 12(1): 61-71.

Eberhardt, M. & Teal, F. (2010). *Productivity analysis in global manufacturing production*. Discussion Paper 515, Department of Economics, University of Oxford. Available online: https://www.economics.ox.uk/research/WP/Pdf/paper515.pdf. Accessed 10/08/2015.

Ehrbeck, T., Lochan, R., Sinha, S., Tahliyani, N. & Zainulbhai, A. (2010). *Inclusive growth and financial security. The benefit of e-payment to Indian society*. McKinsey & Company. http://mckinseyonsociety.com/inclusive-growth-and-financial-security/.

Ellis, K., Lemma, A. & Rud, J-P. (2010). Financial inclusion, household investment and growth in Kenya and Tanzania, Project Briefing No. 43, Overseas Development Institute.

Engelhardt, G.V, Eriksen, M.D, Gale, W.G. & Mills, G.B. (2010). What are the social benefits of homeownership? Experimental evidence for low-income households. *Journal of Urban Economics*, 67: 249-258.

Ericsson, N.R., Irons, J.N. & Tryon, R.W. (2001). Output and inflation in the long run. *Journal of Applied Econometrics*, 16: 241-253.

Ferreira, F.G.H., Lustig, N. & Teles, D. (2015). Appraising cross-national income inequality databases: An introduction. *Journal of Economic Inequality*, 13(3): 497-526

Filmer, D. & Pritchett, L.H. (2001). Estimating wealth effects without expenditure data or tears: An application to education enrollments in states of India. *Demography*, 38(1): 115-132.

Finn, C.M., Zorita, P.M-B. & Coulton, C. (2015). Assets and financial management among poor households in extreme poverty neighbourhoods. *The Journal of Sociology and Social Welfare*, 21(2): 74-94.

FinScope. (2014). FinScope SA 2014 consumer survey data book. Available online: http://www.finmark.org.za/annual-report-2014/. Accessed 12/03/2015.

Ford Foundation. (2004). Asset building for social change: Pathways to large-scale impact. Available online: http://www.fordfound.org. Accessed 12/04/2015.

Frank, K. (2015). The global perspective on prime property and wealth. *The Wealth Report*. Available online: http://www.knightfrank.com/wealthreport. Accessed 03/02/2015.

Friedline, T., Elliott, W. & Chowa, G.A.N. (2013). Testing an asset-building approach for young people: Early access to saving predicts later savings. *Economics of Education Review*, 33: 31-51.

Frölich, M. & Melly, B., (2010). Estimation of quantile treatment effect with stata. *The Stata Journal*, 10(3): 423-457.

Fuentes-Nieva, R. & Galasso, V.N. (2014). *Working for the few: Political capture and economic inequality*. MPRA Paper No. 54984. http://mpra.ub.uni-muenchen.de/54984. Accessed 02/04/2014.

Galor, O. & Zeira, J. (1993). Income distribution and macroeconomics. *The Review of Economic Studies*, 60(1): 35-52.

García-Herrero, A. & Turégano, D.M. (2015). *Financial inclusion, rather than size, is the key to tackling income inequality*. BBVA Working Paper No. 15/05. Available online: http://www.bbvaresearch.com. Accessed 02/03/2015.

Gardeva, A. & Rhyne, E. (2011). Opportunities and obstacles to financial inclusion, Survey Report, Center for Financial Inclusion at ACCION International. Available online: http:// www.centerforfinancialinclusion.org. Accessed 12/07/2015.

Giné, X. & Townsend, R.M. (2004). Evaluation of financial liberalization: a general equilibrium model with constrained occupation choice. *Journal of Development Economics,* 74: 269–307.

Global Findex (2011 & 2014). World Bank global financial inclusion. Washington, DC: The World Bank. Available online: http://www.worldbank.org. Accessed 10/5/2014.

GPFI. (2012a). *Plenary session 2: Proportionality in practice across the standard-setting bodies*: Applying standard and guidance while supporting a financial inclusion agenda. GPFI 1st Annual Conference on Standard-Setting Bodies and Financial Inclusion: Promoting Financial Inclusion through Proportionate Standard and Guidance.

GPFI. (2012b). *Plenary session 3: Financial inclusion- A pathway to financial stability? Understanding the linkages*. GPFI 1st Annual Conference on Standard-Setting Bodies and Financial Inclusion: Promoting Financial Inclusion through Proportionate Standard and Guidance.

Greenwood, J. & Jovanovic, B. (1990). Financial development, growth, and the distribution of income. *Journal of Political Economy*, 98(5): 1076-1107.

Gries, T. & Meierrieks, D. (2010). Institutional Quality and Financial Development in Sub-Saharan Africa. University of Paderborn, Department of Economics. http://www.csae.ox.ac.uk/conferences/2010-EDia/papers/174-Gries.pdf. Accessed 05/09/2014

Grinstein-Weiss, M., Lee, J-S., Greeson, J.K.P., Han, C-K., Yeo, Y.H. & Irish, K. (2008). Fostering low-income homeownership through individual development accounts: A longitudinal randomised experiment. *Housing Debate,* 19(4): 711-739.

Grinstein-Weiss, M., Sherraden, M., Gale, W.G., Rohe, W.M., Schreiner, M. & Key, C. (2013a). Long-term effects of Individual Development Accounts on postsecondary education: Follow-up evidence from a randomized experiment. *Economics of Education Review,* 33: 58-68.

Grinstein-Weiss, M., Sherraden, M., Gale, W.G., Rohe, W.M., Shreiner, M. & Key, C. (2013b). Long-term impacts of individual development accounts on homeownership among baseline partners: Follow-up evidence from a randomised experiment, *American Economic Journal: Economic Policy*, 15(1): 122-145.

Grinstein-Weiss, M., Wagner, K. & Ssewamala, F.M. (2006). Saving and asset accumulation among low-income families with children in IDAs. *Children and Youth Services Review*, 28: 193-211.

Gwama, M. (2014). Explaining weak financial development in Africa. *African Review of Economics and Finance*, 6(2): 69-87.

Han, C-K. & Hong, S-I. (2011). Assets and life satisfaction patterns among Korean older adults: Latent class analysis. *Social Indicator Research*, 100: 225-240.

Han, R. & Melecky, M. (2013). Financial for financial stability: Access to bank deposits and the growth of deposits in the global financial crisis. *World Bank Policy Research Working Paper 6577*. Available online: http://elibrary.worldbank.org/doi/abs/10.1596/1813-9450-6577. Accessed 20/09/2014

Hannig, A. & Jansen, S. (2010). *Financial inclusion and financial stability: Current policy issues*. ADBI working paper series No. 259.

Hoi, C.H., & Hoi, L.Q. (2012). Financial development and income inequality in Vietnam: An empirical analysis. *Journal of Economics and Development*, 14(2): 5-25.

Honohan, P. (2007). Cross-country variation in household access to financial services. Prepared for the Conference "Access to Finance" Washington DC, 15-16 March 2007. Available online: http://siteresources.worldbank.org/INTFR/Resources/Cross_Country_Variation_In_Household_Access.pdf.

Huang, J. (2010). Effect of individual development accounts (IDAs) on household wealth and saving taste. *Research on Social Work Practice*, 20(6): 582-590.

Huang, J. (2013). Intergenerational transmission of educational attainment: The role of household assets. *Economics of Education Review*, 33: 112-123.

Huang, J., Lombe, M., Putnam, M., Grinstein-Weiss, M. & Sherraden, M. (2016). Individual development accounts and homeownership among low-income adults with disabilities: Evidence from a randomised experiment. *Journal of Applied Social Science*, 10(1): 55-66.

Huang, J., Nam, Y., Sherraden, M. & Clancy, M. (2015). Financial capability and asset accumulation for children's education: Evidence from an experiment of child development accounts. *Journal of Consumer Affairs*, Spring: 127-155.

IAIS (2012) *Application Paper on Regulation and Supervision supporting Inclusive Insurance Markets*, Basel: IAIS. October 2012. Available online: http://www.iaisweb.org/Application-papers-763. Accessed 25/09/2015.

Im, K.S., Pesaran, M.H. & Shin, Y. (2003).Testing for unit roots in heterogeneous panels. *Journal of Econometrics*, 115: 53-74.

Jack, W. & Suri, T. (2014). Risk sharing and transaction costs. Evidence from Kenya's mobile money revolution. *American Economic Review*, 104(1): 183-223.

Jann, B. (2016). *Assessing inequality using percentile shares*. University of Bern Social Sciences Working Paper No. 13. Available online: http://repec.sowi.unibe.ch/files/wp13/jann-2015-pshare.pdf. Accessed 05/04/2016.

Jenkins, S.P. (2015).World income inequality databases: an assessment of WIID and SWIID. *Journal of Economic Inequality*. Doi 10.1007/s10888-015-9305-3.

Kai, H. & Hamori, S. (2009). Globalisation, financial depth and inequality in Sub-Saharan Africa. *Economics Bulletin*, 29(3): 1-12.

Kaiser, Md. S. (2012). 'Bottom up vs top-down development approaches', *the Daily Star*, October 2012. Available online: http://www.thedailystar.net/news-detail-252290 (Accessed 02/08/2016).

Kappel, V. (2010). *The effects of financial development on income inequality and poverty*. CER-ETH–Center of Economic Research at ETH Zurich. Available online: http://ssrn.com/abstract=1585148. Accessed 14/03/2013.

Karlan, D. & Zinman, J. (2007). Expanding credit access: Using randomized supply decisions to estimate the impacts. Center Discussion Paper 956, Yale University.

Kaufmann, D., Kraay, A. & Mastruzzi, M. (2010). *The worldwide governance indicators: methodology and analytical issues*. World Bank Policy Research Working Paper No. 5430.

Kelly, S. & Rhyne, E. (2013). Growing income, growing inclusion: How rising incomes at the base of the pyramid will shape financial inclusion. Financial inclusion 2020 project: Mapping the invisible market. *Center for Financial Inclusion Publication 19.* Available online: http:// www.financialinclusion2020.org. Accessed 11/5/2015.

Kempson, E. & Whyley, C. (1999). *Kept out or opt out? Understanding and combating financial exclusion*, Bristol, Policy Press. Available online: http://www.bristol.ac.uk/media-library/sites/geography/migrated/documents/pfrc9902.pdf. Accessed 29/9/2013.

Khan, H.R. (2011). *Financial inclusion and financial stability*: Are they two sides of the same coin? Bank of International Settlement Central Banker's speeches. Available online: http://www.bis.org/review/r111229f.pdf. Accessed 06/08/2014.

Kim, D-H. & Lin, S-C. (2011). Nonlinearity in the financial development–income inequality nexus. *Journal of Comparative Economics*, 39: 310-325.

Kim, M., Kwon, J., Chung, S., Hong, H., Nam, Y., Kim, Y. & Lee, E. (2010). *Seoul Hope Plus Savings Accounts: Asset-building program for low-income households in Seoul*. Prepared for Seoul Welfare Foundation, Centre for Social Research Report No. 10-20. Available online: https://csd.wustl.edu/Publications/Documents/RP10-20.pdf. Accessed 10/101/2016.

King, G.R. & Levine, R. (1993). Finance, entrepreneurship, and growth: Theory and evidence, *Journal of Monetary Economics*, 32(3): 513.542.

Klapper, L., El-Zoghbi, M. & Hess, J. (2016). Achieving the sustainable development goals. The role of financial inclusion. Available online: http://www.ccgap.org. Accessed 23/5/2016.

Klapper, L., Laeven, L. & Rajan, R. (2006). Entry regulation as a barrier to entrepreneurship, *Journal of Financial Economics*, 82: 591-629.

Koenker, R. & Bassett, G. Jr. (1978). Regression quantiles. *Econometrica*, 46(1): 33-50.

Koenker, R. (2000). Quantile regression. Article prepared for the statistics section of the *International Encyclopedia of the Social Sciences*, edited by Stephen Fienberg and Jay Kadane.

Koenker, R. (2005). *Quantile regression*. Econometric society monograph series, Vol. 38. Cambridge: Cambridge University Press.

Kumar, C. (2014). Africa rising? *Inequalities and the essential role of fair taxation. Tax Justice Network Africa*. Available online: http://www.taxjusticeafrica.net. Accessed 09/3/2014.

Kuznets, S. (1955). Economic growth and income inequality. *The American Economic Review, XLV* (1): 1-28.

Laeven, L. & Valencia, F. (2013). Systemic banking crises database. *IMF Economic Review,* 61(2): 225-270. doi:10.1057/imfer.2013.12.

Law, S.H. & Tan, H.B. (2009).The role of financial development on income inequality in Malaysia. *Journal of Economic Development,* 34(2): 153-168.

Law, S.H., Tan, H.B. & Azman-Saini, W.N.W. (2014). Financial development and income inequality at different levels of institutional quality. *Emerging Markets Finance and Trade January–February, 50[*Supplement 1], 21-33.

Lee, Y., Johnson, L., Sherraden, M., Ansong, D. & Chowa, G. (2015). *Taking the bank to the youth: Impacts on saving and asset building from the Ghana YouthSave experiment*. Center for Social Development Working Paper No. 15-43.

Levine, R. (2005). Finance and growth: Theory and evidence. In Aghion, P. & Durlauf, S. (eds.), *Handbook of Economic Growth*, vol. 1, pp. 865-884. North-Holland: Elsevier.

Li, H., Squire, L. & Zou, H-F. (1998). Explaining international and intertemporal variations in income inequality. *The Economic Journal*, 108: 26-43.

Li, Z. & Sherraden, M. (2010). Assets for children: Experiences in Asia and implications for China, *US-China Education Review*, 7(8): 87-94.

Liang, Z. (2006). Financial development and income distribution: A system GMM panel analysis with application to urban China. *Journal of Economic Development,* 31(2): 1-21.

Loke, V. (2013). Parental asset accumulation trajectories and children's college outcomes. *Economics of Education Review*, 33: 124-133.

Machado, J.A.F. & Santos Silva, J.M.C. (2013). Quantile regression and heteroskedasticity. Available online: https://jmcss.som.surrey.ac.uk/JM_JSS.pdf. Accessed 05/7/2015.

Machado, J.A.F., Parente, P.M.D.C. & Santos Silva, J.M.C. (2011). QREG2: Stata module to perform quantile regression with robust and clustered standard errors. Available online: https://ideas.repec.org/c/boc/bocode/s457369.html. Accessed 10/9/2015.

Maimbo, S.M. & Gallegos, C.A.H. (2014). *Interest rate caps around the world*. World Bank Policy Research Working Paper No. 7070.

Mbiti, I. & Weil, D.N. (2011). *Mobile banking: The impact of M-PESA in Kenya*. Natural Bureau of Economic Research Working Paper No. 17129.

McKenzie, D.J. (2005). Measuring inequality with asset indicators. *Journal of Population Economics,* 18: 229-260.

McKernan, S-M., Ratcliffe, C. & Nam, Y. (2010). The effects of welfare and individual development account (IDA) program rules on asset holdings. *Social Science Research,* 39(1): 92-110.

Mehrotra, A. & Yetman, J. (2015). Financial inclusion- issues for central banks, *Bank of International Settlement Quarterly Review*, March: 83-96.

Mills, G., Gale, W.G., Patterson, R., Engelhardt, G.V., Eriksen, M.D. & Apostolov, E. (2008). Effects of individual development accounts on asset purchases and saving behaviour: Evidence from a controlled experiment. *Journal of Public Economics,* 92(5-6): 1509-1530.

Modigliani, F. & Brumberg, R. (1954). Utility analysis and the consumption function: an interpretation of cross-section data. In Kurihara, K.K. (ed.), *Post-Keynesian Economics*, 388-436. New Brunswick, N.J.: Rutgers University Press.

Mookerjee, R. & Kalipioni, P. (2010). Availability of financial services and income inequality: The evidence from many countries. *Emerging Markets Review*, 11: 404-408.

Morgan. P.J. & Pontines, V. (2014). *Financial stability and financial inclusion*. ADBI Working Paper No. 488. Available online: http://www.adbi.org/working-paper/2014/07/07/6353. Accessed 2/10/214.

Moser. (2005). Assets, livelihoods and social policy. Arusha conference, "New Frontiers for Social Policy" December 12-15, 2005. Available online:

http://siteresources.worldbank.org/INTRANETSOCIALDEVELOPMENT/Resources/Moserpaperrev2.pdf. Accessed 10/09/2015.

Obeng-Odoom, F. (2015). Africa: on the rise, but to where? *Forum for Social Change*, 44(3): 234-250.

Obeng-Odoom, F. (2016). Urban governance in Africa today: reframing, experiences, and lessons. *Growth and Change*. DOI: 10.1111/grow.12164.

OECD, (2003). Asset building and the escape from poverty: A new welfare policy debate. Available online: http://www.oecd.org/cfe/leed/assetbuidingandescapefrompovertyanewwelfarepolicydabte.htm . Accessed 14/10/2015.

Ondiege, P. (2013). Fostering financial inclusion with mobile banking. In Periou, C. (ed.), New players and new banking models for Africa. Private Sector & Development. *Proparco's Magazine*, 16: 2-5.

Park, C-Y. & Mercado, R. (2015). *Financial inclusion, poverty and income inequality in developing Asia*. ADB Economics Working Paper Series No. 426.

Pesaran, M.H. (2004). *General diagnostic tests for cross section dependence in panels*. University of Cambridge, Faculty of Economics. Cambridge Working Papers in Economics No. 0435.

Pesaran, M.H. (2007). A simple panel unit root test in the presence of cross-section dependence. *Journal of Applied Econometrics*, 22: 265-312.

Pesaran, M.H. (2006). Estimation and inference in large heterogeneous panels with a multifactor error structure. *Econometrica*, 74(4): 967-1012.

Pesaran, M.H., Shin, Y. & Smith, R.P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American Statistical Association*, 94(446): 621-634.

Pesaran, M. H. & Smith, R.P. (1995). Estimating long-run relationships from dynamic heterogeneous panels. *Journal of Econometrics*, 68(1): 79-113.

Pham, T.T.T. & Pham, T.L. (2012). *Does microinsurance help the poor? Evidence from the targeted health microinsurance program in Vietnam 2004-2008*. ILO Research Paper No. 11.

PovcalNet. (2014). An online analysis tool for global poverty monitoring. The World Bank Group. Available online: http://iresearch.worldbank.org/PovcalNet/index.htm?2. Accessed 21/08/2014.

Radcliffe, D. & Voorhies, R. (2012). A digital pathway to financial inclusion, Available online: http://dx.doi.org/10.2139/ssrn.2186926, The Bill & Melinda Gates Foundation. Accessed 04/05/2014.

Rehman, H.R., Khan, S. & Ahmed, I. (2008). Income distribution, growth and financial development. A cross-countries analysis. *Pakistan Economic and Social Review*, 46(1): 1-16.

Rust, K. (2012). Perspectives on South Africa's Affordable Housing Market Current trends & issues. Available online: http://www.finmark.org.za / www.alhdc.org.za. Accessed 18/05/2016.

Sarma, M. (2012). *Index of financial inclusion – a measure of financial sector inclusiveness*. Berlin Working Papers on Money, Finance, Trade and Development.

SASSA (2016). Fact Sheet: issue no. 2 of 2016-29 February 2016. Available online: http://www.sassa.gov.za. Accessed 09/06/2016.

Saxegaard, M. (2006). *Excess liquidity and effectiveness of monetary policy: evidence from Sub-Saharan Africa*. IMF Working Paper, WP/06/115.

Senbet, L.W. & Otchere, I. (2005). Financial sector reforms in Africa: perspectives on issues and policies. Available online: http://siteresources.worldbank.org/INTABCDEWASHINGTON2005/Resources/LemmaSenbet-final.pdf. Accessed 14/12/2016.

Shahbaz, M. & Islam, F. (2011). Financial development and income inequality in Pakistan: An application of ARDL approach. *Journal of Economic Development*, 36(1): 35-58.

Sherraden, M. (1990). Notes on a theory of welfare based on assets. *Social Review*, 4(Dec.): 580-601.

Sherraden, M. (1991). *Assets and the poor: A new American welfare policy*. Armonk: M.E. Sharpe, Inc.

Sherraden, M. & Boshara, R. (2007). Global savings, assets and financial inclusion. Lessons, challenges and directions. Report from a global symposium June 2007 Singapore Available online: http://www.globalassetsproject.org. Accessed 12/05/2016.

Solt, F. (2009). Standardizing the World Income Inequality Database. *Social Science Quarterly*, 90(2): 231-242. SWIID Version 4.0, September 2013.

Solt, F. (2014). The Standardized World Income Inequality Database. Available online: https://dataverse.harvard.edu/dataset.xhtml?persistentId=hdl:1902.1/11992. Accessed 04/05/2015.

Solt, F. (2015). On the assessment and use of cross-national income inequality datasets. *Journal of Economic Inequality*, 13: 683-691. DOI 10.1007/s10888-015-9308-0.

Solt, F., Habel, P. & Grant J.T. (2011). Economic inequality, relative power, and religiosity. *Social Science Quarterly*, 92(2): 447-465.

Ssewamala, F.M. & Ismayilova, L. (2009). Integrating children's savings accounts in the care and support of Orphaned Adolescents in Rural Uganda. *Social Science Review*, 83(3): 453-472.

Standard Bank (ND). Standard bank fundisa fund: Saving for tertiary education. Available online: http://www.stanlib.com/Individuals/FundiSA/Documents/Standard_Bank_Funisa_Eng.pdf. Accessed 18/03/2016.

StataCorp. (2013). Stata: Release 13. Statistical Software. College Station, TX: StataCorp LP. Available online: http://www.stata.com/manuals13/u.pdf. Accessed 12/11/2015.

Sturm, J-E. & De Haan, J. (2015). Income inequality, capitalism, and ethno-linguistic fractionalisation. *American Economic Review*: *Paper & Proceedings*, 105(5): 593-597.

Swamy, P.A.V. B. (1970). Efficient inference in a random coefficient regression model. *Econometrica*, 38(2): 311-323.

Tan, H-B. & Law, S-H. (2012). Nonlinear dynamics of the finance-inequality nexus in developing countries. *Journal of Economic Inequality*, 10: 551-563.

Tanguy, B. (2010). Impact analysis of rural electrification projects in Sub-Saharan Africa, *The World Bank Research Observer,* 27: 33-51.

Tchouassi, G. (2011). Microfinance, inequality and vulnerability: Empirical analysis from Central African countries. *Journal of Development and Agricultural Economics*, 3(4): 150-156.

UNDP, (20111). Human development report. Sustainability and inequality. A better future for all. Available online: http://hdr.undp.org. Accessed 15/04/2014.

van Rooyen, C., Stewart, R. & de Wet, T. (2012). The impact of microfinance in Sub-Saharan Africa: A systematic review of the evidence. *World Development*, 40(11): 2249-2262.

Wan, G., Lu, M. & Chen, Z. (2006).The inequality–growth nexus in the short and long run: Empirical evidence from China. *Journal of Comparative Economics,* 34: 654–667.

Wietzke, F-B. (2015). Who is poorest? An asset-based analysis of multidimensional wellbeing. *Development Policy Review*, 33(1): 33-59.

Wittenberg, M. (2015). *Problems with SWIID: the case of South Africa*. A Southern Africa Labour and Development Research Unit Working Paper No. 148 and DataFirst Technical Paper 30. Cape Town: SALDRU, University of Cape Town.

World Bank. (2008). Finance for all? Policies and pitfalls in expanding access. World Bank Policy Research Report.

World Bank. (2012). Good practices for consumer financial protection. Available online: http://www.worldbank.org. Accessed 08/03/2016.

World Bank. (2013). Responsible finance: Financial capability and consumer protection. Available online: http://responsiblefinance.worldbank.org/surveys/users-of-financial-services. Accessed 10/07/2016.

World Bank. (2014a). Global survey on consumer protection and financial literacy: Oversight frameworks and practices in 114 economies. Available online: http://www.worldbank.org. Accessed 14/04/2016.

World Bank. (2014b). The World Development Indicators. Washington, DC: The World Bank http:///www.worldbank.org/data. Accessed 12/06/2014.

World Bank, (2014c). The World Global Financial Development. Washington, DC: The World Bank. Available online: http://www.worldbank.org/data. Accessed 05/05/2014.

World Bank (2016). Universal financial access 2020. Available online: http://ufa.worldbank.org/ Accessed 05/05/2016.

World Economic Forum, (2014). Global agenda: Outlook on the global agenda 2014. Available online: http://www.weforum.org. Accessed 18/05/2015.

Zhan, M. & Sherraden, M. (2011). Assets and liabilities, educational expectation, and children's college degree attainment. *Children and Youth Services Review,* 33(2011): 846-854.